

Final Staff Assessment (Part 2)

**SUNRISE COGENERATION
POWER PROJECT**

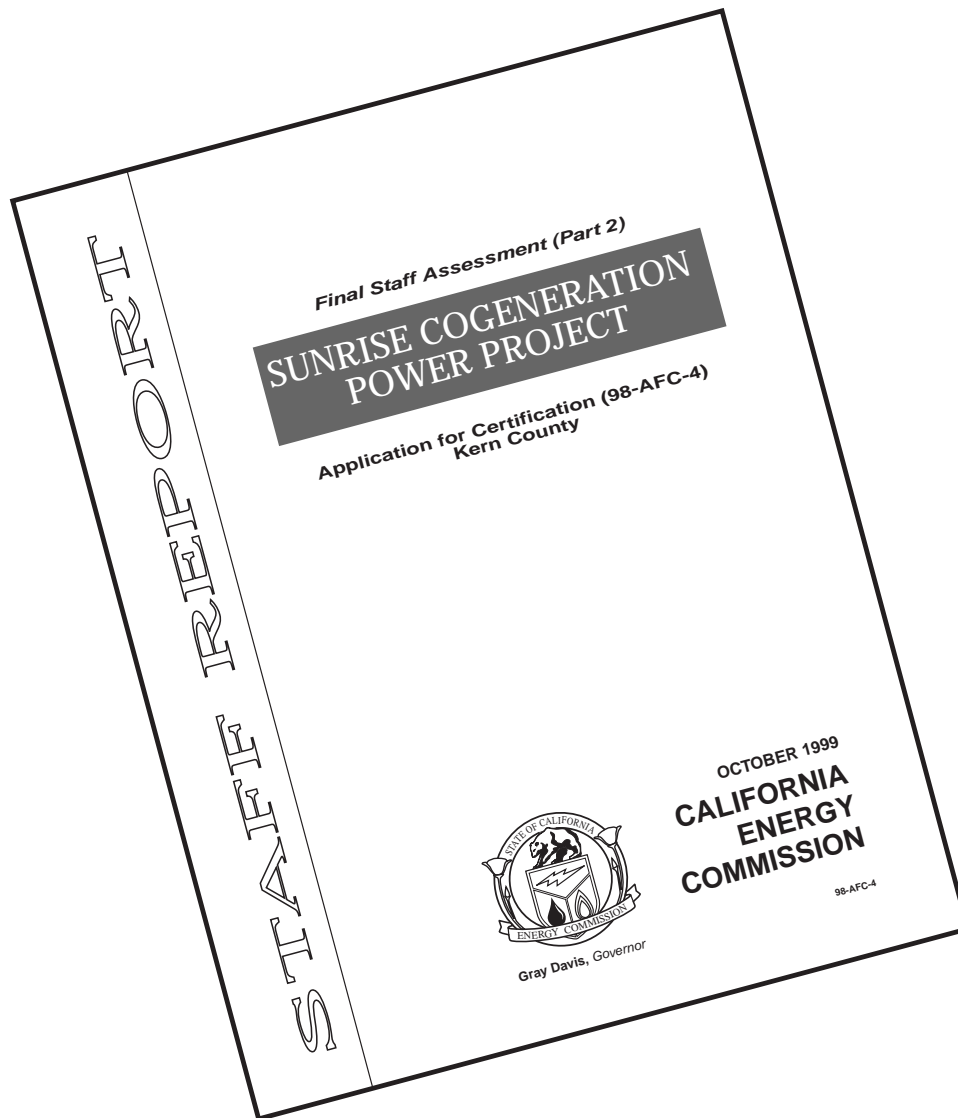
**Application for Certification (98-AFC-4)
Kern County**



Gray Davis, Governor

**OCTOBER 1999
CALIFORNIA
ENERGY
COMMISSION**

98-AFC-4



CALIFORNIA ENERGY COMMISSION

Marc Pryor, *Energy Commission Project Manager*
Robert Haussler, *Manager*

SITING OFFICE

Robert L. Therkelsen, *Deputy Director*

**ENERGY FACILITIES SITING &
ENVIRONMENTAL PROTECTION DIVISION**

This Final Staff Assessment (FSA), Part II contains the California Energy Commission (Energy Commission) staff's evaluation of the Sunrise Cogeneration and Power Company (SCPC) Application for Certification (98-AFC-4) for the Sunrise Cogeneration and Power Project (SCPP). The following technical areas are enclosed: Worker Safety and Fire Protection, Socioeconomics, Traffic and Transportation, and Transmission System Engineering. Please see Part I of the FSA for the background of the project, a description of the project, a description of staff's assessment, and a more complete introduction to the project.

Part I of the FSA was filed on October 1, 1999, and contained the following technical areas: Need Conformance, Hazardous Materials Management, Visual Resources, Waste Management, Transmission Line Safety and Nuisance, Land Use, Noise, Cultural Resources, Biological Resources, Facility Design, Geology/Paleontology, Reliability, Efficiency, Alternatives and General Conditions (includes Compliance Monitoring and general Facility Closure).

The remaining sections of staff's FSA are expected to be filed as follows: the Air Quality and Public Health sections within three weeks of receipt, by staff, of the San Joaquin Valley Unified Air Pollution Control District's Determination of Compliance; the Soils and Water Resources section is expected to be filed at the same time, however, staff has concerns about the chemical constituents of the proposed produced water (wastewater), and the process and permit structure under which the wastewater treatment facilities, Valley Waste, operates. Resolution of these concerns may delay the filing of the Soils and Water Resources section past that of the Air Quality and Public Health sections.

Staff's Recommendation

Until completion of the Air Quality, Public Health, and Soils and Water Resources analyses, staff cannot be certain what changes to its testimony may be required. Therefore, at this time, staff is unable to recommend that the project be certified.

TABLE OF CONTENTS
Sunrise Cogeneration and Power Project (98-AFC-4)
Final Staff Assessment

WORKER SAFETY AND FIRE PROTECTION.....	5
INTRODUCTION	5
LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)	5
SETTING	7
IMPACTS.....	8
MITIGATION.....	10
FACILITY CLOSURE.....	14
CONCLUSION AND RECOMMENDATIONS	14
PROPOSED CONDITIONS OF CERTIFICATION.....	14
REFERENCES	17
TRAFFIC AND TRANSPORTATION	19
INTRODUCTION	19
LAWS, ORDINANCES, REGULATIONS AND STANDARDS.....	19
SETTING	22
IMPACTS.....	26
IMPACTS.....	35
COMPLIANCE WITH LAWS, ORDINANCES, REGULATIONS AND STANDARDS	37
FACILITY CLOSURE.....	37
MITIGATION.....	38
CONCLUSIONS AND RECOMMENDATIONS.....	38
CONDITIONS OF CERTIFICATION.....	39
REFERENCES	42
SOCIOECONOMICS	43
INTRODUCTION	43
LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)	43
SETTING	44
IMPACTS.....	44
CUMULATIVE IMPACTS.....	48
FACILITY CLOSURE.....	53
MITIGATION.....	53
CONCLUSIONS AND RECOMMENDATIONS.....	54

TABLE OF CONTENTS
Sunrise Cogeneration and Power Project (98-AFC-4)
Final Staff Assessment

PROPOSED CONDITIONS OF CERTIFICATION	54
REFERENCES.....	56
TRANSMISSION SYSTEM ENGINEERING.....	59
INTRODUCTION.....	59
LAWS, ORDINANCES, REGULATIONS AND STANDARDS	60
FACILITY CLOSURE	69
CONCLUSIONS AND RECOMMENDATIONS	70
CONDITIONS OF CERTIFICATION	71
REFERENCES.....	72
DEFINITION OF TERMS	73

WORKER SAFETY AND FIRE PROTECTION

Testimony of Chris Tooker

INTRODUCTION

Industrial workers use process equipment and hazardous materials on a daily basis. Accidents involving relatively small amounts of material can result in serious injuries to workers. Worker protection measures can include special training, protective equipment and procedural controls. The employer must also comply with applicable laws, ordinances, regulations and standards (LORS) to protect workers. This Worker Safety and Fire Protection analysis assesses the completeness and adequacy of the measures proposed by the Sunrise Cogeneration and Power Company (SCPC) to comply with applicable health and safety standards and other reasonable requirements (Title 20, California Code Regulations, section 1743), and draws conclusions about the compliance of the proposed project with applicable LORS (Title 20, California Code Regulations, section 1744). These standards are designed to protect the health and safety of workers during construction and operation of the facility, and to establish adequate fire protection and emergency response procedures.

Staff has reviewed the Sunrise Cogeneration and Power Project's (SCPP) Application for Certification (AFC) to determine whether SCPC has proposed adequate measures to:

- comply with all applicable (LORS);
- protect the workers during construction and operation of the facility;
- protect against fire; and
- provide adequate emergency response procedures.

Unless features of the project present unusual industrial safety or fire protection problems, staff believes that compliance with applicable LORS will be sufficient to ensure worker safety and fire protection, and provide adequate emergency response procedures.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

FEDERAL

Occupational Safety and Health Act of 1970 (29 United States Code sections 651 et seq.).

Occupational Safety and Health Administration Safety and Health regulations (29 Code of Federal Regulations §§ 1910.1 - 1910.1500)

29 U.S.C. §651 et seq. (Occupational Safety and Health Act of 1970)
Occupational Safety and Health Act of 1970 (29 United States Code section (USC) (§) 651 et seq.).

29 C.F.R. §1910.120 (HAZWOPER Standard) Defines the regulations for Hazardous Waste Operations and Emergency Response. This section covers the clean-up operations, hazardous materials removal work, corrective actions, voluntary clean-up operations, monitoring, and emergency response required by federal, state, and local agencies of hazardous substances that are present at controlled and uncontrolled hazardous waste sites.

29 C.F.R. §§1910.1 - 1910.1500 (Occupational Safety and Health Administration Safety and Health regulations)

29 C.F.R. §§1952.170 - 1952.175 (Approval of California's plan for enforcement of its own Safety and Health requirements, in lieu of most of the federal requirements found in ?? 1910.1 - 1910.1500)

STATE

California's plan for enforcement of its own Safety and Health requirements is in lieu of most of the federal requirements found in 29 CFR §§ 1952.170 - 1952.175.

- Title 8, California Code of Regulations (CCR), section 450 et seq. (Applicable requirements of the Division of Industrial Safety, including Unfired Pressure Vessel Safety Orders, Construction Safety Orders, Electrical Safety Orders, and General Industry Safety Orders).
- California Building Code, Title 24, CCR, § 501 et seq. The California Building Code is designed to provide minimum standards to safeguard human life, health, property and public welfare by regulating and controlling the design, construction, quality of materials, use and occupancy, etc. of buildings and structures.
- Title 8, CCR, § 5192 (HAZWOPER Standard). Defines the regulations for Hazardous Waste Operations and Emergency Response. This section covers the clean-up operations, hazardous removal work, corrective actions, voluntary clean-up operations, monitoring, and emergency response required by federal, state, local agencies of hazardous substances that are present at controlled and uncontrolled hazardous waste sites.

LOCAL

1998 Edition of California Fire Code (CFC) and all applicable National Fire Protection Association (NFPA) standards. The fire code contains provisions necessary for fire prevention and information about fire safety, special occupancy

uses, special processes, and explosive, flammable, combustible and hazardous materials.

Uniform Fire Code Standards. This is a companion publication to the CFC and contains standards of the American Society for Testing and Materials and of the National Fire Protection Association.

California Building Code. (Cal. Code Regs., Tit. 24, § 501 et seq.) The California Building Code is designed to provide minimum standards to safeguard human life, health, property and public welfare by regulating and controlling the design, construction, quality of materials, use and occupancy, etc. of buildings and structures.

SETTING

The Sunrise project is located on a site previously used for oil production in western Kern County. Off-site fire protection is provided by the Kern County Fire Department (KCFD). **WORKER SAFETY AND FIRE PROTECTION Table 1** lists the fire stations located closest to the SCPP site and their response time capabilities, equipment and staffing levels (Dickson 1999).

WORKER SAFETY AND FIRE PROTECTION Table 1
Fire Station/Fire Protection Capabilities

Station	Response Time	Equipment	No. of Firefighters
Station 23 100 Broadway Fellows, CA	10 minutes	1997 Pierce Saber Engine	2
Station 24 2 nd Street McKittrick, CA	12 minutes	1997 Pierce Saber Engine	2
Station 21 303 10 th Street Taft, CA	25 minutes	1990 Beck Engine	3
Station 22 801 Stanislaus Mariposa, CA (HAZMAT TEAM)	23 minutes	1997 Pierce Saber Engine	2
Landco Station 3000 Landco Drive Bakersfield, CA (HAZMAT TEAM)	45-50 minutes	Engine Hazmat response Vehicle Technical rescue Vehicle	3

IMPACTS

DIRECT IMPACTS

FIRE PROTECTION

To determine the project's impacts on fire protection, staff reviewed the information provided in the AFC regarding available fire protection services and equipment (SCPP 1998A, Section 8.7.3.2). The project will include the following fire protection equipment: yard hydrants, hose stations, water spray and sprinkler systems, a carbon dioxide fire protection system, deluge spray system, smoke detectors, combustible gas detectors, and fire extinguishers. SCPC will be required to provide final diagrams and plans to staff and the KCFD, prior to construction and operation of the project, to confirm the adequacy of these fire protection measures. The Sunrise facility will also be supported by local fire protection services, as described in **Worker Safety and Fire Protection Table 1**. The KCFD has evaluated the potential impacts of the proposed project on their service capabilities, as described below under **CULMULATIVE IMPACTS**.

WORKER SAFETY

Industrial environments are dangerous. Workers may be exposed to chemical spills, hazardous wastes, fires, moving equipment, and confined space and entry/egress problems. It is important for SCPC to have well-defined policies, procedures, training, hazard recognition and control at their facility to minimize such hazards and to protect workers. SCPC has provided adequate outlines of their proposed worker safety plans that will be expanded prior to construction and operation of the project, as required by conditions of certification **SAFETY-1** and **SAFETY-2**.

INDIRECT IMPACTS

FIRE PROTECTION

The SCPP will produce approximately 120,000 barrels of steam per day for enhanced oil recovery in the Midway-Sunset oil field. This amount of steam is sufficient for roughly 2,000 oil production wells and associated steam injection wells within a 3/4 mile radius around the proposed power plant site. Staff considers this to be the sphere of influence of the steam produced by the power plant.

Roughly two-thirds (1,300 wells) of the oil production wells and steam injection wells currently exist, the remaining 700 wells will be new and will need to be constructed. According to SCPC, the 700 remaining wells will be constructed over the 6-year period from 1999 through 2004. Sixty five percent of the new wells will be oil production wells and the remaining thirty five percent will be steam injection wells (SCPP, 1999).

The KCFD makes annual inspections of all Texaco oil field facilities in the project area to update their records and maps, and to make fire protection

recommendations. The Department has reviewed Texaco's plans for adding the 700 new wells. They have concluded that the impact will not cause an unusual response increase by the Department, and that they will not require any additional staffing at this time (CEC, 1999).

WORKER SAFETY

The drilling and construction activities associated with the development of the 700 additional wells are consistent with the existing oil field development activities in the area. Texaco Global Gas and Power policies, plans and procedures which are already in effect will assure worker safety during oil field operations.

CUMULATIVE IMPACTS

There could potentially be five power plants built in western Kern County in the near future, including the La Paloma, Sunrise, Elk Hills, Midway Sunset, and Pastoria projects. Staff has completed a visual inspection of the proposed project sites and the KCFD responding fire stations. Staff has confirmed that some of the structures proposed to be located on the proposed project sites can average more than 50 feet taller than the largest buildings in the communities of Buttonwillow, Elk Hills, and Taft. The KCFD has adequate resources to respond to emergencies that consist of structures that are approximately one story high only. Because of the height of some of the power plant equipment and structures, the KCFD has identified a need for additional resources, such as a ladder truck for elevated hose streams, and high-angle and confined space rescue capabilities, to adequately serve the proposed projects.

Staff held a meeting with the KCFD on March 3, 1999 to discuss potential impacts of the proposed projects on the KCFD's service capabilities. Staff subsequently received a letter from the KCFD, dated March 18, 1999, which identifies the potential service impacts of the proposed projects. The letter also identifies additional equipment and staffing required for the KCFD to provide fire protection and emergency response services to the power plant projects.

The letter states:

"Both of the County's two ladder trucks are located in the metropolitan Bakersfield area; the ladder truck closest to the power plants is located about 40 miles away. The operations and structures associated with the thermal electric power plants result in increased incident complexity and access problems which our typical fire engine is not equipped to handle (both in terms of number of personnel and specialized equipment) without the back up of a ladder truck. The distance between the power plant locations and the metropolitan Bakersfield area is such that it is not acceptable to dispatch an existing ladder truck for emergency response to Western Kern County because of excessive time delay. The potential needs for elevated hose streams, and high-angle and confined space rescue capability can only be addressed through the addition of a ladder truck; it will provide the appropriate fire apparatus to get the specialized personnel and equipment to the scene of incidents

in a timely manner and provide the elevated platform for hose streams and rescue access as needed.” (Dickson 1999)

MITIGATION

As mitigation for the impacts to fire protection services, the KCFD is proposing that the applicant or applicants purchase a ladder truck that will be located at Station 21 in Taft. One ladder truck will be required as mitigation for all of the proposed projects. High Angle and Confined Space Specialist Technicians would be trained to operate the ladder truck, and staffing for three work shifts would need to be provided, including a captain, an engineer and a firefighter. Refer to the **Socioeconomics** section of this Final Staff Assessment (FSA) for a discussion of funding requirements recommended by staff to address the proposed project’s direct and cumulative impacts on the KCFD’s fire protection service capabilities.

CONSTRUCTION SAFETY AND HEALTH PROGRAM

The Construction Safety Orders found in Title 8, California Code of Regulations contain health and safety requirements promulgated by California Occupational Safety and Health Administration (Cal/OSHA) that are applicable to the construction phase of the project (CCR, tit. 8, § 1500 et seq.). The various plans required by the regulations are incorporated in the project Construction Safety and Health Program, the major elements of which include:

- Construction Injury and Illness Prevention Program (IIPP) (CCR, tit. 8, § 1509);
- Construction Fire Protection and Prevention Plan (CCR, tit. 8, § 1920);
- Personal Protective Equipment Program (CCR, tit. 8, §§ 1514 - 1522; and §§ 3401 - 3411).

In addition, the requirements of the Electrical Safety Orders (CCR, tit. 8, and §§-2299 - 2974) and Unfired Pressure Vessel Safety Orders (CCR, tit. 8, §§ 450 - 544) may be applicable to the project.

SCPC provided adequate outlines in the AFC for each of the above programs and plans, and prior to construction of the facility will provide detailed programs and plans in accordance with condition of certification **SAFETY-1**.

OPERATION SAFETY AND HEALTH PROGRAM

During the operation phase of the project, many Electrical Safety Orders (CCR, tit. 8, and §§-2299 - 2974) and Unfired Pressure Vessel Safety Orders (CCR, tit. 8, §§ 450 - 544) will be applicable. In addition, the Division of Industrial Safety has promulgated regulations applicable solely to operations. These are contained in the General Industry Safety Orders (CCR, tit. 8, § 3200 et seq.). SCPC will

incorporate these requirements into its Operation Safety and Health Program, the major elements of which include:

- Injury and Illness Prevention Program (CCR, tit. 8, § 3203)
- Emergency Action Plan (CCR, tit. 8, § 3220)
- Fire Prevention Plan (CCR, tit. 8, § 3221)
- Personal Protective Equipment Program (CCR, tit. 8, §§ 3401 - 3411)

SCPC provided adequate outlines for each of the programs and plans in the AFC and will provide detailed programs and plans in accordance with condition of certification **SAFETY-2**.

SAFETY AND HEALTH PROGRAM ELEMENTS

SCPC has provided proposed outlines for both a Construction Safety and Health Program and an Operation Safety and Health Program. Both programs will cover the Sunrise project, including any aspect of the transmission lines and pipelines under the applicant's control. The measures in these plans are derived from applicable sections of state and federal law. The major items required in both Safety and Health Programs are as follows:

INJURY AND ILLNESS PREVENTION PROGRAM

SCPC has provided an adequate draft outline for an Injury and Illness Prevention Program (IIPP) (SC&PP 1998a). SCPC will need to submit an expanded Operations Illness and Injury Prevention Program to Cal/OSHA for review and comment 30 days prior to both construction and operation of the project.

Cal/OSHA will review and provide comments on the IIPP as the result of an on-site consultation at the request of SCPC, during which a Cal/OSHA representative will complete a physical survey of the site, analyze the work practices, and point out those practices that are likely to result in illness or injury. The on-site consultation will give Cal/OSHA an opportunity to evaluate Sunrise's IIPP and apply it directly to activities taking place on-site (Cunningham 1998).

EMERGENCY ACTION PLAN

Title 8, California Code of Regulations, section 3220 requires an Emergency Action Plan. The AFC contains a satisfactory outline for an emergency action plan (SC&PP 1998a, pg. 87-18). The outline lists the following features: fire and emergency reporting procedures, evacuation procedures, and a Spill Prevention/Control and Countermeasures Plan. Staff proposes condition of certification **SAFETY-2**, which requires SCPC to submit a final Operation's Emergency Action Plan to Cal/OSHA, for review and comment, after an on-site consultation.

FIRE PROTECTION PLAN

Title 8, California Code of Regulations, section 3221 requires a Fire Protection Plan. The AFC contains a draft proposed fire protection and prevention plan which is adequate for staff's analysis. The plan discusses the following topics:

- on-site Fire Protection Systems, including carbon dioxide extinguishing systems, preaction sprinkler systems, a dry pipe deluge system, hand-held fire extinguishers, and fire detection and alarm systems; and
- local Fire Protection Services.

Staff proposes that SCPC submit a Construction Fire Protection and Prevention Plan and an Operation Fire Protection Plan to the California Energy Commission Compliance Project Manager (CPM) and the KCFD for review and approval to satisfy proposed conditions of certification **SAFETY-1 and 2**.

PERSONAL PROTECTIVE EQUIPMENT PROGRAM

The purpose of the Personal Protective Equipment Program is to ensure that employers comply with applicable requirements for the provision and use of Personal Protective Equipment (PPE), and to provide employees with the information and training necessary to carry out the program. SCPC has provided a satisfactory outline that identifies minimum requirements of a proposed PPE program (SC&PP 1998a, pg. 8.7-19).

Under Title 8, California Code Regulations, sections 3380 - 3400, personal protective equipment will be required whenever hazards are encountered which, due to process, environment, chemicals, or mechanical irritants, can cause injury or impairment of body function as a result of absorption, inhalation, or physical contact. The project's operational environment will create potential situations where personal protective equipment is required.

Sunrise's PPE Program should include a written policy on the use of protective equipment (and methods of communicating the information to the employees), selection of the proper type of equipment, training of employees on the correct use and maintenance of the equipment, enforcement of personal protective equipment use, and the use of devices that provide respiratory protection, hearing conservation, eye protection and head protection.

Staff believes that if SCPC develops and carries out a PPE Program similar to the format and elements listed above, the program will meet applicable regulations and will significantly reduce the potential for adverse impacts to workers.

GENERAL SAFETY

Besides the specific plans listed above, there are other requirements, some of which are called "safe work practices," imposed by various worker safety LORS applicable to this project. For the sake of clarity, staff has grouped these requirements as follows:

LIGHTING

American National Standards Practice for Industrial Lighting, ANSI/IES-RP-7, contains requirements to protect workers from inadequate lighting. Insufficient light leads to errors and sometimes accidents. An error may result from not seeing a

situation that is dangerous and not being able to react quickly enough. The **Visual Resources** section of this FSA provides further detail concerning off-site consequences and performance requirements for exterior lighting.

HAZARDOUS MATERIALS RELEASES

Staff's analysis considered the system design and administrative procedures proposed to reduce the likelihood of an accidental release of acutely hazardous materials that could affect workers. See the **Hazardous Materials** section of this FSA for more detail.

SMOKING

Sunrise shall not allow smoking in areas designated in the National Electrical Code (NEC) as Class I, Divisions 1 and 2. These locations are areas where ignitable concentrations of flammable gases or vapors exist or where volatile flammable liquids or flammable gases are handled, processed, or used. Signs restricting smoking in these areas of the project site will be posted to protect the facility and workers.

LOCK-OUT/TAG-OUT

Title 8, California Code of Regulations, sections 2320.4, 2320.5, 2320.6, 2530.43, 2530.86, 3314, and 6003 identify required lock-out and tag-out safety practices and programs which reduce employee exposure to moving equipment, electrical shock, and hazardous and toxic materials. Lock-out is the placement of a padlock, blank flange, or similar device on equipment to ensure that it will not be operated until the lock-out device is removed. Tag-out is the use of warning signs that caution personnel that equipment cannot be energized until the lock-out device is removed. Warning signs can also be used to alert employees about the presence of hazardous and toxic materials. SCPC's lock-out/tag-out program should include steps for applying locks and tags, steps for removing locks and tags, and employee training on lock-out/tag-out procedures.

CONFINED SPACES ENTRY PROGRAM

Title 8, California Code of Regulations, sections 5156 - 5159 identifies the minimal standards for preventing employee exposure to dangerous air contaminants and/or oxygen deficiency in confined spaces. A confined space is any space that limits the means of egress, is subject to toxic or flammable contaminants, or has an oxygen-deficient atmosphere. Examples of confined spaces are silos, tanks, vats, vessels, boilers, compartments, ducts, sewers, pipelines, vaults, bins and pits. SCPC shall take the following steps to ensure worker safety during work in confined spaces.

Before entering a confined space, site personnel will evacuate or purge the space and will shut off lines that provide access for substances into the space. The air in the vessels will be tested for oxygen deficiency, and the presence of both toxic and explosive gases and vapors will be evaluated before entry into the confined space is allowed. Lifelines or safety harnesses will be worn by anyone entering the confined space, and a person will be stationed outside in a position to handle the line and to

summon assistance in case of emergency. Appropriate respirators will be available whenever hazardous conditions may occur.

HOT WORK

Hot work is any type of work that causes a spark and can ignite a fuel source. Examples include welding, cutting and brazing. Before proceeding with hot work, workers will need to get a work authorization from the project's assigned Safety Officer. The control operator, together with the shift supervisor, will decide whether hot work is required on a job and if a work authorization will be required. Before hot work is undertaken, the area will be inspected, the job shall be posted and, depending on what is located in the area, additional safeguards may be implemented.

FACILITY CLOSURE

The project owner/operator is responsible for maintaining an operational fire protection system during closure activities. The project must also stay in compliance with all applicable health and safety LORS during that time.

CONCLUSION AND RECOMMENDATIONS

CONCLUSIONS

If SCPC provides a Construction Safety and Health Plan, and an Operation Safety and Health Plan, as required by conditions of certification SAFETY-1 and 2; and provides the funding required by Conditions of Certification SOCIO-2, staff believes that the project will incorporate sufficient measures to ensure adequate levels of industrial safety and fire protection, and comply with applicable LORS.

RECOMMENDATIONS

If the Energy Commission certifies the project, staff recommends that the Energy Commission adopt the following proposed conditions of certification. The proposed conditions of certification provide assurance that the Project Construction and Operation Safety and Health Programs proposed by SCPC will be reviewed by the appropriate agencies before implementation. The conditions also require verification that the proposed plans adequately assure worker safety and fire protection and comply with applicable LORS.

PROPOSED CONDITIONS OF CERTIFICATION

SAFETY-1 The project owner shall submit to the CPM a Project Construction Safety and Health Program, which shall include:

- A Construction Injury and Illness Prevention Program
- A Construction Fire Protection and Prevention Plan
- A Personal Protective Equipment Program

Protocol: The Construction Injury and Illness Prevention Program and the Personal Protective Equipment Program shall be submitted to the California Department of Industrial Relations, Division of Occupational Safety and Health (Cal/OSHA) Consultation Service, for review and comment concerning compliance of the program with all applicable Safety Orders.

The Construction Fire Protection and Prevention Plan shall be submitted to the KCFD for review and acceptance.

Verification: Thirty days prior to the start of construction, or a lesser period of time as mutually agreed to by the project owner and the CPM, the project owner shall submit to the CPM a copy of the Project Construction Safety and Health Program and the Personal Protective Equipment Program, with a copy of the cover letter of transmittal of the plan to CAL-OSHA. The project owner shall provide a letter from the KCFD stating that they have reviewed and accept the Construction Fire Protection and Prevention Plan.

SAFETY-2 The project owner shall submit to the CPM a Project Operation Safety and Health Program containing the following:

- An Operation Injury and Illness Prevention Plan
- An Emergency Action Plan
- An Operation Fire Protection Plan
- A Personal Protective Equipment Program

Protocol: The Operation Injury and Illness Prevention Plan, Emergency Action Plan, and Personal Protective Equipment Program shall be submitted to the Cal/OSHA Consultation Service, for review and comment concerning compliance of the program with all applicable Safety Orders.

Protocol: The Operation Fire Protection Plan and the Emergency Action Plan shall be submitted to the KCFD for review and acceptance.

Verification: At least 30 days prior to the start of operation, the project owner shall submit to the CPM a copy of the final version of the Project Operation Safety & Health Program. It shall incorporate Cal/OSHA's Consultation Service comments, stating that they have reviewed and accepted the specified elements of the proposed Operation Safety and Health Plan.

The project owner shall notify the CPM that the Project Operation Safety and Health Program (Injury and Illness Prevention Plan, Fire Protection Plan, the Emergency Action Plan, and Personal Protective Equipment requirements), including all records and files on accidents and incidents, is present on-site and available for inspection.

SAFETY-3 The project owner shall design and install all exterior lighting to meet the requirements contained in the Visual Resources conditions of

certification and in accordance with the American National Standards Practice for Industrial Lighting, ANSI/IES-RP-7.

Verification: Within 60 days after construction is completed, the project owner shall submit a statement to the CPM that the illuminance levels contained in ANSI/IES RP-7 were used as a basis for the design and installation of the exterior lighting.

REFERENCES

- SCPP (Sunrise Cogeneration and Power Project) 1998a. Application for Certification, Sunrise Cogeneration and Power Project (98-AFC-4). Submitted to the California Energy Commission, December 21, 1998.
- SCPP, 1999. Data Response #? Providing information on oil field expansion. ??
- Brauer, Roger L. 1990. Safety and Health for Engineers. 1990.
- CEC (California Energy Commission) 1999, E-mail to Marc Pryor (CEC) from Fire Marshal Phil Castle, Kern County Fire Department, dated 10/7/99, responding to staff's request for comments and possible additional requirements that the KCFD would deem necessary regarding the oil field expansion associated with the proposed Sunrise Cogeneration Project.
- Cal/OSHA Consultation. 1990. Cal/OSHA Consultation Pamphlet.
- Clark, Daniel, Fire Chief, Kern County Fire District, Letter discussing Impact of Proposed Power Plant Construction on Fire Protection Services. March 18, 1999.
- Cunningham, Don. Safety Engineer at Cal/OSHA Consultation, Sacramento office. Personnel communication with Ellen Townsend-Smith regarding review of applicant's Health & Safety Plan. November 16, 1998.
- Dickson, Chuck, Assistant Fire Marshall Kern County Fire District, Letter discussing fire stations for La Paloma and Sunrise Cogeneration Plants, January 29, 1999.
- McElroy, Joe, Engineer with Kern County Fire District. Personnel communication with Ellen Townsend-Smith regarding location of local fire departments. November 16, 1998.

TRAFFIC AND TRANSPORTATION

Testimony of David Flores

INTRODUCTION

The Traffic and Transportation section of the Preliminary Staff Assessment addresses the extent to which the project may impact the transportation system within the vicinity of its proposed location. This section summarizes the separate analyses by both the Sunrise Cogeneration and Power Company (SCPC) in the Application for Certification (AFC) and the Energy Commission staff of the potential traffic and transportation impacts associated with construction and operation of the Sunrise Cogeneration and Power Project (SCPP). These analyses included the identification of: 1) the roads and routings which are proposed to be used; 2) potential traffic related problems associated with those routes; 3) the anticipated number of trips to deliver oversize/overweight equipment; 4) the anticipated encroachment upon public right-of-ways during the construction of the proposed project and associated appurtenant facilities; 5) the frequency of trips and probable routes associated with the delivery of hazardous materials; and 6) the availability of alternative transportation methods such as rail.

Staff has used this information to determine the potential for the project to have significant traffic and transportation impacts, as well as to assess the availability of mitigation measures which could reduce or eliminate the significance of those impacts. Conditions of certification are included to implement the appropriate mitigation measures and to insure that the project complies with the applicable Laws, Ordinances, Regulations and Standards (LORS).

LAWS, ORDINANCES, REGULATIONS AND STANDARDS

FEDERAL

The federal government addresses transportation of goods and materials in Title 49, Code of Federal Regulations:

- Title 49, Code of Federal Regulations, section 171-177, governs the transportation of hazardous materials, the type of materials defined as hazardous, and the marking of the transportation vehicles.
- Title 49, Code of Federal Regulations, section 350-399, and Appendices A-G, Federal Motor Carrier Regulations, addresses safety considerations for the transport of goods, materials and substances over public highways.

STATE

The California Vehicle Code and the Streets and Highways Code contain requirements applicable to the licensing of drivers and vehicles, the transportation of hazardous materials and right-of-way. In addition, the California Health and

Safety Code addresses the transportation of hazardous materials. Specifically, these codes include:

- California Vehicle Code, section 353 defines hazardous materials.
- California Vehicle Code, sections 31303-31309 regulate the highway transportation of hazardous materials, the routes used, and restrictions thereon.
- California Vehicle Code, sections 31600-31620 regulate the transportation of explosive materials.
- California Vehicle Code, sections 32000-32053, regulate the licensing of carriers of hazardous materials and include noticing requirements.
- California Vehicle Code, sections 32100-32109, establish special requirements for the transportation of inhalation hazards and poisonous gases.
- California Vehicle Code, sections 34000-34121, establish special requirements for the transportation of flammable and combustible liquids over public roads and highways.
- California Vehicle Code, sections 34500 et seq., regulate the safe operation of vehicles, including those that are used for the transportation of hazardous materials.
- California Vehicle Code, sections 2500-2505, authorize the issuance of licenses by the Commissioner of the California Highway Patrol for the transportation of hazardous materials including explosives.
- California Vehicle Code, sections 13369, 15275, and 15278, address the licensing of drivers and the classifications of licenses required for the operation of particular types of vehicles. In addition, these sections require the possession of certificates permitting the operation of vehicles transporting hazardous materials.
- California Streets and Highways Code, sections 117 and 660-72, and California Vehicle Code 35780 et seq., require permits for the transportation of oversized loads on county roads.
- California Streets and Highways Code, sections 660, 670, 1450, 1460 et seq., and 1480 et seq., regulate right-of-way encroachment and the granting of permits for encroachment on state and county roads.
- California Health and Safety Code, section 25160 et seq., address the safe transport of hazardous materials.

LOCAL

KERN COUNTY

The Circulation Element of the Kern County General Plan sets up local goals and guidance policies about building and transportation improvements. It introduces planning tools essential for achieving the local transportation goals and policies (County of Kern, 1972). Relevant goals and policies include, in part, the following:

PRIVATE DEVELOPMENT ACCESS TO EXISTING ROADWAY NETWORK

As a condition of private development approval, developers shall build roads needed to access the existing road network (Policy No. 1).

GROWTH BEYOND 2010

The County should monitor traffic volumes and patterns on County major highways (Policy No. 1).

Development applications must demonstrate that sufficient transportation capacity is available to serve the proposed project at Level of Service "D" (LOS D) or better.

TRUCKS ON HIGHWAYS

Make California Department of Transportation (Caltrans) aware of heavy truck activity on Kern County's roads (Policy No. 1).

Start a program that monitors truck traffic operations (Policy 2).

Promote a monitoring program of truck traffic operations (Policy 2).

TRUCKS ROUTES

The Transportation Management Department should oversee truck travel patterns and be aware of locations where heavy trucks traverse residential areas (Policy No. 1).

TRANSPORTATION OF HAZARDOUS MATERIALS

State maintained highways are acceptable as commercial hazardous waste transportation routes (Policy No. 1).

Kern County and affected cities should reduce use of county maintained roads and city maintained streets for transportation of hazardous materials (Policy No. 3).

Restrict commercial transportation of hazardous materials in accordance with Vehicle Code, section 31303 (Policy No. 4). This circulation element recommends charting routes where hazardous material shipments can be transported.

ROAD PAVEMENT DAMAGE

The County shall continue to maintain pavement conditions and check operating conditions by collection and review of traffic flow and accident data to rate the circulation system (Policy No. 1).

REGIONAL TRANSPORTATION PLAN

The Kern County Council of Governments (COG) has prepared an RTP establishing transportation goals, policies, objectives, and actions for various modes of transportation. The RTP is a long-range (20-year) plan that assesses the environmental impacts of proposed projects, establishing air quality conformity as required by federal regulations and discussing intermodal and multimodal transportation activities. The Kern County COG adopted the current RTP in September 1998.

TRANSPORTATION IMPROVEMENT PLAN

The Kern County COG is required by federal law to develop and publish a TIP at least every two years. The TIP is a short-range (7-year) program that incrementally implements the RTP. The TIP consists of project lists from the State Transportation Improvement Program (STIP) for urbanized and non-urbanized areas as well as other programs using state and/or federal funding. The Kern County COG adopted the current TIP in September 1998.

CONGESTION MANAGEMENT PLAN

The Kern County COG has prepared a Congestion Management Plan (CMP) to insure that a balanced transportation system is developed relative to population and traffic growth, land use decisions, LOS performance standards, and air quality improvement. The CMP is intended to be an integral and complementary part of Kern County's plans and programs, and must be updated every two years. The Kern County COG adopted the current CMP in 1996; the 1998 CMP update is in progress.

SETTING

REGIONAL DESCRIPTION

ROADWAYS AND HIGHWAYS

The project site is located in the western portion of Kern County. The power plant is located about 35 miles southwest of Bakersfield, California. The Sunrise Project is 16 acres in size and within the Midway-Sunset Oilfield, approximately 3 miles northwest of Fellows, California and 2.5 miles south of Derby Acres. The project site is reached from State Route (SR) 33 west on Midway Road to Mocal Road and north on Shale Road to the project site. An asphalt-paved or compacted in-situ material access road will be constructed from Shale Road to the proposed site. The plant's administration building parking lot and the road encircling the power plants outer perimeter will also be asphalt paved.

Two primary highways provide access to the plant site, State Route 99 and Interstate 5. Each have the following weight and load limitations; when these are exceeded, a permit is required:

- 80,000 lb. gross vehicle weight;
- 8 feet in height;
- 6 feet in width; and
- 65 feet in length.

Additional access to the Sunrise project area is provided by State Route 33, 43, 58, 119, and 166, which are predominately two-lane roads.

TRAFFIC AND TRANSPORTATION Table 1 identifies the annual average daily traffic (AADT), annual average peak-hour traffic, annual average daily truck traffic, percent of truck traffic highway capacity, and Level of Service (LOS) for highways in the vicinity of the project. These traffic estimates are presented for various mileposts or junctions on each highway. The criteria for LOS on highways are established by Caltrans. These criteria take into account numerous variables such as Annual Average Daily Traffic (AADT), capacity, grade, environment, and other relevant information. As indicated in the AFC, according to Caltrans policy, LOS D is acceptable for planning purposes, whereas LOS E and F are considered unacceptable. As provided in **TRAFFIC AND TRANSPORTATION Table 1**, all of the state routes potentially affected by the proposed Sunrise Project are operating at or above LOS D.

TRAFFIC AND TRANSPORTATION Table 1
Current Traffic Characteristics of Highways in the Project Area

Highway/Mile post	Location	Annual Average Daily Traffic	Annual Average Peak Hour Traffic	Annual Average Daily Truck Traffic	Percent of Truck Traffic	Highway Capacity	LOS
Interstate 5							
13.52	Wheeler Ridge Rd.	51,000	6,200	16,830	33	3,560	B
15.86	Jct. Rte. 99 North	51,000	6,200	16,830	33	3,560	B
19.61	Jct. Rte. 166	25,000	2,650	4,750	19	3,510	B
38.79	Jct. Rte. 119	23,000	2,450	4,370	19	3,510	B
State Route 33							
11.56	Jct. Rte. 166 East	4,400	450	836	19	1,890	C
17.89	Jct. Rte. 119 East	8,600	840	2,236	26	1,860	D
23.41	Midway Road	10,600	1,250	2,544	24	1,390	C
State Route 43							
0.11	Jct. Rte. 119	3,550	320	1,030	29	1,700	B
1.90	Jct. Rte. I-5	3,550	320	1,030	29	1,720	B
8.11	Jct. Rte. 58 East	3,300	300	957	29	1,700	B
9.16	Jct. Rte. 58 West	9,600	940	2,688	28	1,680	B
16.86	Shafter, Central Ave.	7,600	670	2,128	28	3,720	B
25.13	Jct. Rte. 46	7,200	650	2,016	28	1,710	D
State Route 58							
39.96	Jct. Rte. 43 North	6,100	510	1,891	31	1,740	B
46.10	Allen Road	13,700	1,350	4,100	30	1,740	B
State Route 99							
17.50	Jct. Rte. 119 West	33,000	3,100	8,250	25	3,560	B
23.51	Jct. Rte. 58 East	100,000	7,800	26,000	26	3,520	B

Highway/Mile post	Location	Annual Average Daily Traffic	Annual Average Peak Hour Traffic	Annual Average Daily Truck Traffic	Percent of Truck Traffic	Highway Capacity	LOS
State Route 99 (Cont.)							
26.65	Jct. Rte. 58 West	114,000	8,900	26,220	23	3,520	B
State Route 119							
0.00	Jct. Rte. 33	4,250	360	808	19	3,800	D
18.17	Jct. Rte. 43 North	8,400	800	1,848	22	1,860	B
19.77	Jct. I-5	5,900	560	1,121	19	1,700	B
31.28	Jct. Rte. 99	10,400	870	2,288	22	1,850	D
State Route 166							
0.01	Jct. Rte. 33 North	3,150	280	725	23	1,250	B
22.80	Jct. I-5	2,200	200	638	29	1,800	B

TRAFFIC AND TRANSPORTATION Table 2 represents data pertaining to the existing traffic characteristics on local roadways potentially affected by the proposed project, including: roadway classification, annual average daily traffic, roadway capacity, and LOS of each roadway affected by the Sunrise Project. Overall, the rated LOS on these local roadways is comprised of free-flowing operating conditions (LOS A). The following data is not available from the County for these roads: peak hour LOS, annual average daily truck traffic, and truck traffic counts.

Although traffic counts specifically for trucks are not available for local roads, a large ratio of trucks to cars, due to the number and proximity of the oil fields, generally characterize traffic in the project vicinity.

According to the AFC (AFC pg.8.10-15), Kern County Public Works Department does not have weight and load limits or capacity levels for county roadways (Norton, 1999). Caltrans has indicated that the weight and load limitations for state highways apply to county roadways if the County specifies no limitations (California Street and Highway Code 35700 et seq.). Therefore, all the local roadways to be used during the construction and operational phase of the Sunrise Project are subject to a load limit of 80,000 pounds per truck. Trucks used during project construction that are oversized, overweight, over width, or over length will require a transportation permit from Caltrans. Staff has addressed the permit requirement under the Conditions of Certification section of this report.

TRAFFIC AND TRANSPORTATION Table 2
1997 Traffic Characteristics of Local Roadways in the Project Area

Roadway	Location	Classification ¹	Annual Average ² Daily Traffic	Capacity ²	LOS ²
Airport Road	City of Taft-Honolulu Road	N/A	900	9,000	A
Midway Road	Entire Road	Secondary 2-lane	800	15,000	A
Mocal Road	Entire Road	Secondary 2-lane	1,600	9,000	A
Shale Road	Entire Road	Secondary 2-lane	340	9,000	A

SOURCE: Sunrise AFC Table 8.10-3

¹Castro, personnel communication

²Nienken, personal communication

N/A = Not available

IMPACTS

POWER PLANT

CONSTRUCTION PHASE

COMMUTE TRAFFIC

Construction of the generating plant facility will occur over an estimated 15-month period and will require a total construction workforce of 160 workers on average, assuming a single shift and a 40-hour five day work week. Of the 160 workers, approximately 23 will be contractor-staff. During the peak construction period (in the 9th month after the notice to proceed) an estimated 255 workers will be required for the power plant. Of the 255 workers, 225 are assumed to be local workers and the remaining 30 will make up the non-local workforce. Workforce vehicle trips were calculated based on this data.

Staff agrees with the AFC's assumptions, that of the 160 workers, 32 workers (20%) will carpool. The remaining 128 will drive a separate vehicle to the project site, making two trips per day (one round trip from home to the site and back).

Therefore, construction of the project could result in a total of approximately 320 vehicle trips per day on average, and about 408 vehicle trips per day during the peak construction period (based on 204 workers during peak construction). (AFC pg.8.10-18). Parking for construction personnel and visitors will be provided in an

area on or adjacent to the project site. Construction workforce traffic would generally occur between 6:00 a.m. and 7:00 a.m. in the morning, and again between 4:00 p.m. and 5:00 p.m. in the evening.

Workers originating in Shafter or Wasco will use SR 43 south to SR 119 then southwest on SR 119. The workers would continue west on Midway Road to Mocal Road, then take Shale Road north to the project site. From Taft, Ford or Maricopa, workers will use SR 33 to the plant site or travel along local roads (e.g., Midway, Mocal, Shale, or Airport Roads). This will be dependent on which part of the proposed project is being constructed (e.g., plant site or transmission corridor). Construction related workers coming from other cities or towns in Kern County or from Southern California will likely use I-5 north to SR 166 west, then take SR 33 north to Shale, Midway, or Airport Roads. Again, this would be dependent on which part of the proposed Sunrise Project is being constructed.

Using the traffic pattern assumptions described above, construction related vehicle traffic would affect SR 166 most heavily, resulting in traffic increases of 6% along portions of the route. However, this traffic impact is not considered significant because along this state route the project will not reduce the LOS to the Caltrans significance criteria of LOS E or F. Also, these increases would be short term, occurring only during the peak period.

Local roads providing access from the state routes to the project site will be most affected by construction workforce traffic commuting to and from the project sites. During peak construction period, traffic on these roads is estimated to increase between 26 percent to 102 percent. Shale Road would receive the most vehicle trips/day, resulting in a traffic increase of 408 trips or 102 percent from current levels. As indicated in the AFC, on average, construction-related traffic generated by the workforce will result in an additional 180 to 256 vehicles per day (an increase of 16 percent to 75 percent over present conditions) on local roads. The AFC further indicates traffic increases would generally occur between 6:00 a.m. and 7:00 a.m. in the morning and again between 4:00 p.m. and 5:00 p.m. in the evening. These increases would be short-term, occurring only during the peak construction period.

Local county roads in the vicinity of the Sunrise project site have a capacity of 9,000 vehicles per day. Because existing average daily traffic on these local roads is minimal (AFC Table 8.10-3, pg.8.10-15), these roads are able to accommodate large, short-term increases in traffic without reducing their LOS to a significant adverse level (i.e., LOS E or F). The AFC indicates to reduce the potential for local residents to perceive peak period traffic as significant, construction related traffic related increases would be mitigated to the extent feasible through implementation of a construction traffic control plan (see proposed condition of certification **TRANS-4**).

TRUCK TRAFFIC

Construction of the generating plant will require the use and installation of heavy equipment and associated systems and structures. Heavy equipment will be used

throughout the construction period, including trenching and earthmoving equipment, forklifts, cranes, cement mixers and drilling equipment.

In addition to deliveries of heavy equipment, construction materials such as concrete, wire, pipe, cable, fuels and reinforcing steel will be delivered to the site by truck. An estimated 3,014 truck deliveries will be made to the plant site over the course of the 15 month construction period (on average approximately 400 truck deliveries per month). Assuming 20 average workdays per month and two trips for each truck delivery (one to and one from the site), the project will generate approximately 40 truck trips per day, on average. Deliveries will also include hazardous materials to be used during project construction. Sunrise has assumed that the majority of these materials will be transported from either Bakersfield or Los Angeles.

Sunrise has assumed that about 70 percent of the truck deliveries (14 trucks) would originate in Bakersfield and drivers would use SR 58 west to SR 43 south and then southwest on SR 119 to the project site. The remaining 30 percent of truck deliveries (6 trucks) will originate from southern California; drivers would travel via I-5 north to SR 166 west to SR 33 to the project site.

Transportation of equipment that will exceed the load size and limits of certain roadways will require special permits. The procedures and processes for obtaining such permits are fairly straightforward. Conditions of certification that ensure compliance with these requirements are discussed later in this section.

Construction debris and small quantities of hazardous wastes will be generated during project construction as described in the Waste Management Section of this report. During construction, no more than several trucks per month will be required to haul waste for disposal. Transportation of hazardous materials to and from the project will be conducted in accordance with California Vehicle Code Section 31300 et seq. because Kern County does not have local ordinances regulating the transportation of hazardous materials. Since the transport of hazardous wastes will be conducted in accordance with transportation regulations governing such transport, no significant impact is expected.

On January 14, 1999 and additionally on March 10, 1999, Ms. M. Frausto representing Caltrans submitted letters pertaining to its review of the AFC for the Sunrise Project. Upon review of the traffic analysis in the AFC and their review of potential environmental impacts and hazardous waste concerns, Caltrans recommended that an additional traffic analysis be conducted at the intersection of SR 119 and Midway Road for possible mitigation measures that could be required during the construction phase of the project.

On September 24, 1999, staff received the traffic analysis prepared by Radian International. A copy was sent to Caltrans for their review and recommendations. On October 7, 1999, staff received a response from Caltrans which staff has subsequently prepared two conditions under the "Conditions of Certification" section of this report (**TRANS-7 AND TRANS- 8**) that address Caltrans requirements. The two conditions require the project owner to provide a flagman and submit a traffic

control plan for the intersection of State Route 119 and Midway Road during the six-month peak construction period. In addition, the project owner shall negotiate an agreement with Caltrans for the payment of a fair share amount for future signalization at this intersection. Further, Caltrans also indicated that encroachment permits will be required for any construction work within state right-of-way. Due to the size, weight and additional truck traffic during construction of the Sunrise Project, this will contribute to additional wear on the local roads, subsequently increasing the need for regular roadway maintenance. Project-related roadway wear and tear is not considered significant and implementation of the construction traffic control plan (**TRANS-5**) and repairs to all roadways (**TRANS-6**) would address these roadway impacts.

RAILWAYS

During construction of the Sunrise Project, a number of major equipment components will be delivered to a railroad staging area located approximately 35 to 40 miles east-northeast of the project site. The rail delivered equipment list will include the following:

- Combustion turbines (2);
- Generators (2);
- Generators step-up transformers (2); and
- Heat recovery steam generator modules (approximately 18).

The listed components will be unloaded at the rail staging area and hauled via truck on local roadways to the job site, a distance of approximately 35 to 45 miles. Based on the limited number of rail deliveries, no impacts to existing rail service or local roadways will occur.

ACCIDENT ANALYSIS

Traffic accident records from a 1998 Caltrans report in the AFC were reviewed and compared with statewide average accident rates to determine if any of the primary access roads experience unusually high numbers of accidents. The data provided by Sunrise's consultant reflect the primary access routes to the power plant site have accident rates typically from .26 to 5.03 accidents per million vehicle miles traveled. Statewide average accident rates for similar facilities ranged from a low of .71 for freeways to a high of 2.27 for conventional multilane facilities. Roadway segments with accident rates higher than statewide averages included SR 119 junction with SR 33 (5.03), SR 119 junction with SR 99 (4.11) and SR 43 junction with SR 58 (2.90). However, this level of accident history does not indicate any unusual hazard or improperly designed facilities along these roads. (SCPP 1999, AFC page 8.10-13). Following a telephone conversation with the officer in charge at the California Highway Patrol in (Buttonwillow headquarters) Kern County, he also concurred that there are no unusual hazards or improperly designed facilities along the state highway routes with unusually higher accident rates.

OPERATIONAL PHASE

COMMUTE TRAFFIC

Potential long-term traffic impacts are associated with the facility's operational workforce. Operation of the generating plant will require a labor force of approximately 24 full-time employees. Assuming that each employee will drive a separate vehicle to work and that they will make one round trip from home to work per day, operation of the plant will generate approximately 48 vehicle trips per day. Adequate parking will be made available for employees on a paved lot adjacent to the administration building. SCPC has assumed that the majority of the permanent workforce will reside in Bakersfield and their preferred route to work will be west along SR 119 to Midway Road, then west to SR 33 to the project site. Operations-related traffic impacts are considered minimal, representing less than 1 percent of existing AADT on SR 119, 1 percent of existing AADT on SR 33, and an estimated 6 percent of existing AADT on Midway Road. Therefore staff's conclusion is that the state highways and local roadways LOS will not be reduced to a significant adverse level (i.e., LOS E or F).

TRUCK TRAFFIC

The transportation and handling of hazardous substances associated with the project can increase road hazard potential. The handling and disposal of hazardous substances is addressed in the Waste Management Section, and the Hazardous Materials Section.

Transportation of equipment that will exceed the load size and limits of certain roadways will require special permits. The procedures and processes for obtaining such permits are fairly straightforward. Mitigation measures and Conditions of Certification that ensure this compliance are discussed later in this analysis.

The transportation and handling of hazardous substances associated with the project can increase roadway hazard potential. (See AFC 8.10.3.3, pg.8.10-19 for a general discussion.) The handling and disposal of hazardous substances are also addressed in the Waste Management, the Workers Safety and Fire Protection, and the Hazardous Materials sections of this report.

At the August 17, 1999 Preliminary Staff Assessment Workshop, representatives of the California Unions for Reliable Energy ("CURE"), addressed their concern as to potential anhydrous ammonia transportation accidents. Their conclusion was the risk associated with the transport of anhydrous ammonia to the project site had not been adequately addressed in the Staff Analysis (SA). They further concluded that the SA should include an ammonia transportation accident analysis and impose conditions to mitigate the impacts associated with such an accident.

As stated in the AFC, there are two potential truck routes for the delivery of anhydrous ammonia; from the Bakersfield area, State Route (SR) 58, SR 43, SR 119 to Midway, Mocal, and Shale Road to the project site. Total mileage from the Bakersfield area along the designated truck route to the project site is estimated to

be 44 miles. Along this designated route, adequate areas for passing safely and adequate shoulders are provided for emergency turnout. From a field investigation, I-5 and SR 99, which are predominately four-lane divided highways, primarily serve the project. SR 33, 43, 58, 119 and 166, which are predominantly two-lane highways, provide additional access to the project site. All of these state routes are under the jurisdiction of Caltrans. Midway, Mocal and Shale Road are under the jurisdiction of Kern County and are improved two-lane roadways. There are no visual obstructions on this route and any cross street traffic along this route is provided with state-approved stop signs. There are no major developments (commercial or housing) along the designated route, and vehicle traffic consists of local residents, farming equipment, and oil industry personnel.

The second route would be from Interstate 5 and State Route 99, which are primary highways in Kern County. The pavement on both these highways is in good condition with no visual obstructions. The approximate mileage from Interstate 5, along Highway 166 and 33 to the project site is 40 miles. There are no major developments (commercial or housing) along the designated route, and vehicle traffic consists of local residents, farming equipment, and oil industry personnel. There are no railroad crossings along either access routes to the proposed project.

Staff's visual observation of the roadway system of the designated routes to the proposed project site, taking into account the two possible truck routes, indicates that there are no unusual hazards and that the roadway system can sufficiently and safely handle the delivery of anhydrous ammonia by approximately 3 trucks per month without incident. Other hazardous material such as hydrogen (1 truck delivery per month) and corrosion inhibitor and detergent (1 truck delivery every three months) are minimal impacts and will meet state safety requirements as stated in this analysis.

The State Department of Motor Vehicles specifically licenses all drivers who carry hazardous materials. Drivers are required to carry a manifest, available for inspection by the California Highway Patrol inspection stations along major highways and interstates; check for weight limits and conduct periodic brake inspections. Commercial truck operators handling hazardous materials are also required to take first aid instruction and procedures on handling hazardous waste spills.

Truck tank design for the anhydrous ammonia and other hazardous materials are federally mandated by DOT specifications, and are designed for impact safety.

Staff analyzed potential safety hazards related to anhydrous ammonia truck deliveries for the purpose of assuring that necessary measures are in place at the federal, state, local, and the industry level to ensure public safety.

For the purposes of responding to the concerns of CURE, the transport of anhydrous ammonia along public roadways has been addressed by staff, with a conclusion that roadway designs along both truck routes are adequate, with no safety improvements needed. In addition, State Routes 33, 58, 43, 119, 166 and Interstate 5 have been approved by the California Highway Patrol as highways for

use in the transportation of inhalation related hazardous materials (personal telephone conversation on August 19, 1999).

Staff has not addressed highway accident and traffic count levels on interstate and state highway systems because these roads are used continuously by commercial trucks and the traveling public. The focus of this safety analysis is as the anhydrous ammonia truck deliveries leave the Interstate and highway system to the project site.

As provided in the Laws, Ordinances, Regulations and Standards (LORS) section of this report, federal and state regulations are in place to ensure that the handling and transportation of hazardous materials on all roadways are done in a manner that protects public safety. Federal laws specific to this issue are Title 49, Code of Federal Regulations, Sections 350-399 and Appendices A-G, of the Federal Motor Carrier Safety Regulations. These sections address safety considerations for the transport of goods, materials, and substances over public highways.

The California Vehicle Code and the Streets and Highways Code (Sections 31600 through 34510) are equally important to ensure that the transportation and handling of hazardous materials are done in a manner that protects public safety. Enforcement of these statutes is under the jurisdiction of the California Highway Patrol.

During project operation, approximately 3 truck deliveries per month of anhydrous ammonia will be made to the plant site. Other hazardous and non-hazardous materials, as described in the Waste Management and Hazardous Materials Sections, will be delivered by truck to the plant site on an incidental basis (e.g., 1 truck per month of hydrogen; 1 truck delivery every three months of corrosion inhibitor, and detergent; and 1 truck delivery per year of lubricating oil, and carbon dioxide). The anticipated travel routes for materials delivery from the Bakersfield area will be along SR 58, SR 48, SR 119 and Midway, Mocal, and Shale Roads.

Some of the hazardous material generated at the site during plant operation will be transported for disposal at a Class I landfill or transported offsite for recycling as described in the Waste Management Section. SCPC has estimated that hazardous waste generated onsite will be transported offsite for disposal about every 90 days by licensed hazardous waste transporters.

Potential impacts of the transportation of hazardous materials are mitigated to a level of insignificance by compliance with federal and state standards established to regulate the transportation of hazardous substances. In addition, due to the limited amount of truck traffic associated with the operational phase of the project, hazards with other local truck traffic in the area is considered minimal. Mitigation measures and conditions of certification that ensure compliance with state, federal and local permit and safety requirements are discussed later in this section.

LINEAR FACILITIES

Potential impacts associated with the transmission line route include both construction and operation related impacts. Construction related impacts will result from the movement of heavy equipment, trucks, and worker vehicles along access routes during construction of transmission line towers and installation of conductors.

While this work will not directly impact traffic operations, several aspects of transmission line tower construction and conductor installation could potentially result in impacts. These include: 1) workforce related traffic; 2) access to proposed tower structure locations; 3) transmission line roadway crossings; and 4) construction equipment and materials deliveries. These issues are discussed below.

On June 4, 1999, SCPC submitted a Transmission Supplement 2 document which discussed the environmental effects of the proposed Route B corridor transmission route (including all subset routes B, D, E, and F). Routes A,C and G are no longer considered viable by SCPC, therefore they are not requesting certification or environmental review of these routes.

Subset routes D, E, and F would follow the Route B corridor and would involve the joint participation of SCPC with one or more other projects in the construction and operation of a single transmission line.

The County maintained roadways that would provide access to the proposed transmission line B corridor are described in **TRAFFIC AND TRANSPORTATION Table 3** which includes the roadway classification, AADT, roadway capacity, and existing LOS of each roadway affected by the transmission line. Overall, the rated LOS on these local roadways comprises of free-flowing operating conditions (LOS A).

Construction of the transmission line along Route B corridor is anticipated to take 7 months and require up to 7 workers per month during the surveying, site clearing, and grading. During installation of the conductors, the workforce will peak at 19 workers during the 4th month following the issuance of the CEC license. This peak construction period will coincide with the peak construction associated with the power plant. It is further assumed that construction will be completed by several crews working simultaneously along the route to minimize the construction period.

TRAFFIC AND TRANSPORTATION TABLE 3
1997 Traffic Characteristics of Local Roadways
Providing Access to the Route B Corridor

Roadway	Location	Classification	Annual Average Daily Traffic	Capacity ²	LOS ²
Reserve Road (1)	West of Skyline Road	Secondary 2-lane	220	9,000	A
Skyline Road (1)	East of Reserve Road	Secondary 2-lane	140	9,000	A
Buerkle Road (2)	West of Mirasol	Secondary 2-lane	700	9,000	A
Mirasol Avenue (2)	South of State Route 58	Secondary 2-lane	130	9,000	A

SOURCE: Sunrise AFC Table 8.10-3

Notes and Sources:

(1) Radian International, 1998

(2) Nienken, personal communication

One staging area will be established at the Sunrise Project site to store equipment and material storage and to provide a field office. Employees will report to this staging area at the beginning and the end of each workday, then distribute themselves (carpool) as needed to various work sites along the transmission line route. Most local county roads operate at LOS A and workforce related traffic would generate minimal increases to the existing traffic volumes on these roads. For tower access, a variety of travel routes will be used, including the Midway –Sunset and Diablo transmission line access roads, and other farm and spur roads. With the use of these existing access roads, local roadway roads (e.g., Buerkle Road, Mirasol Avenue) and highways will not be significantly impacted by workforce-related traffic associated with construction of the transmission line.

Where road spurs are required, they will generally require some grading to clear existing ground cover, but the roadway surface will be the natural terrain. There are no plans for abandonment of these spur roads since they will provide access for maintenance of the transmission line. The spur roads will continue to be maintained by SCPC for these purposes. Neither the construction of any potential spur roads, nor their use during transmission tower construction will adversely affect the existing county roadways. For these reasons, construction of the towers for the transmission line route will not result in any significant traffic and transportation related impacts.

The transmission line route will cross State Route 33 just west of Derby Acres and will cross SR 58 just south of the existing Midway Substation. The crossings are anticipated to take from 10-12 hours, and require an encroachment permit from

Caltrans. Crossing of all local roadways will occur in accordance with permitting authority requirements. Crossings of county maintained roads will also require encroachment permits from Kern County Transportation Management Department.

Construction of the transmission line will require the use and installation of heavy equipment, including various trucks (pickups, booms, cement and digger/auger), mobile cranes, a cable puller and a tensioner. In addition to deliveries of heavy equipment, construction materials such as tubular steel pole foundation sections, tubular steel poles, and consumables will be delivered by truck to the transmission line staging sites. In some cases, vehicles used to transport heavy machinery and construction materials and equipment will require a transportation permit from Caltrans, as described above for transmission line construction.

Given the small number of truck deliveries, and their distribution among multiple staging sites and work areas, traffic impacts associated with construction equipment and materials deliveries for the transmission line are considered to be insignificant.

IMPACTS

DIRECT EFFECTS

TEMPORARY EFFECTS

POWER PLANT SITE

The temporary traffic impacts at the power plant site would occur during the construction phase, lasting a total of approximately 15 months (SCPP 1998a, p.2-34). Construction activities would include materials and equipment deliveries and storage, the use of heavy equipment, and the erection of large structures. Because the construction period would last more than a year it is considered more than short-term. However, the current level of service (LOS A) on the county maintained roadways, and ample capacity to accommodate the project's construction traffic will not significantly impact current traffic patterns.

ELECTRIC TRANSMISSION LINE

The construction period for the electric transmission line would last approximately 9 months (SCPP 1999m, Tables 3.8-2 and 3.8-3). However, construction in any one area would last substantially less time. Therefore, traffic impacts due to construction would be short term and not significant.

PERMANENT EFFECTS

Permanent effects are those that would remain after construction of the project. As discussed in this report, after final construction of the power plant and transmission line, permanent employees (approximately 24 full-time employees) assigned to the everyday task of maintaining the power plant will be minimal. The transmission line will require occasional inspections and maintenance, but employees will generally utilize existing road spurs to access the area. Based on these facts, the power

plant and transmission lines will not significantly impact current traffic patterns in the area.

INDIRECT EFFECTS

TEMPORARY EFFECTS

The construction of 700 new oil wells and appurtenant facilities, such as new dirt roads, steam injecting wells, and connecting pipelines resulting from the project, as well as resizing the water treatment facility, would not cause temporary indirect effects. The analysis of the available capacity of the regional roadways described in this section shows that the regional transportation system serving the Kern County area has ample capacity (LOS A) to accommodate the proposed project's construction and operation generated traffic.

PERMANENT EFFECTS

The operation of 700 new oil wells and appurtenant facilities, such as new dirt roads, steam injecting wells, and connecting pipelines resulting from the project, as well as resizing the water treatment facility, would not cause permanent indirect effects. Because the detailed analysis of the direct effects concludes that the direct effects would not be significant, the permanent indirect traffic impacts, being even less than the direct effects, would not be significant.

CUMULATIVE EFFECTS

TEMPORARY EFFECTS

In regard to the potential for temporary cumulative traffic impacts from the proposed project, the La Paloma Generating Project, the Elk Hills Power Project, and the planned Midway-Sunset Project, no cumulative impacts on traffic are expected for the following reasons:

- Peak construction traffic at the Sunrise project will occur after peak construction of the La Paloma Generating Project and prior to the Elk Hills and Midway-Sunset power plant proposals.
- Traffic for the Sunrise Project will not use the same access roads used by La Paloma, Elk Hills, and Midway-Sunset Power Projects.

PERMANENT EFFECTS

As indicated, the other proposed projects in the area are the La Paloma Generating Project, Elk Hills and Midway-Sunset Power Projects. After the aforementioned power plants are constructed, they will operate 7 days a week, 24 hours per day. Assuming each of the other proposed plants uses the same number of operating personnel as the Sunrise Project (approximately 24 employees) Monday through Friday of each week, this small number of commuters from each of the plants will not significantly impact current traffic patterns.

In summary, the construction of 700 new wells (some of which are steam injection and some of which are production wells), and associated dirt access roads, modification to existing facilities such as the water treatment facility have been reviewed by staff as to their indirect and direct environmental effects. Based on the current and future traffic characteristics (ie. LOS, AADT, highway capacities) of the area, traffic associated with these proposals are minimal, and regional and local roadways are considered to have adequate capacity to accommodate related traffic.

COMPLIANCE WITH LAWS, ORDINANCES, REGULATIONS AND STANDARDS

FEDERAL

Sunrise has stated its intention to comply with all federal LORS. A condition to ensure compliance is included below. Staff believes such compliance will not present any unusual difficulties. Therefore, the project is considered consistent with identified federal LORS.

STATE

Sunrise has stated its intention to comply with all state LORS. A condition to ensure compliance is included below. Staff believes such compliance will not present any unusual difficulties. Therefore, the project is considered consistent with identified state LORS.

LOCAL

For operational employees, trip reduction measures could be employed. But since the maximum number of employees assigned to any one shift is approximately 24, trip reduction measures are not necessary for this project.

FACILITY CLOSURE

INTRODUCTION

There are at least three circumstances in which a facility closure can take place: planned closure, unexpected temporary closure and unexpected permanent closure.

PLANNED CLOSURE

Planned closure occurs at the end of a project's life, when the facility is closed in an anticipated, orderly manner, at the end of its useful economic or mechanical life, or due to gradual obsolescence. The applicant will prepare a Facility Closure Plan for submittal to the Energy Commission for review and approval, at least twelve months prior to the proposed closure. At the time of closure, all then-applicable LORS will be identified and the closure plan will address with how these LORS will be complied.

UNEXPECTED TEMPORARY CLOSURE

Unexpected temporary closure occurs when the facility is closed suddenly and/or unexpectedly, on a short-term basis, due to unforeseen circumstances such as a natural disaster, or an emergency. In the event of temporary closure, the effects on traffic and transportation would be similar to those for normal operation of the power plant facility, and the applicant would have to comply with all applicable LORS section with respect to transportation permits for hazardous materials and equipment deliveries and removal.

UNEXPECTED PERMANENT CLOSURE

Unexpected permanent closure occurs if the project owner closes the facility suddenly and/or unexpectedly, on a permanent basis. This includes unexpected closure where the owner remains accountable for implementing the on-site contingency plan. It can also include unexpected closure where the project owner is unable to implement the contingency plan, and the project is essentially abandoned. Staff assumes that the facility will either remain idle until such time that new ownership is established, or dismantling of the facility will occur. In any event, the owner will have to secure applicable transportation permits to satisfy the LORS requirements as stated in this report.

In the event of permanent closure, the effects would be similar to those associated with project construction. Permanent closure will involve a peak work period with commute traffic. In either instance, the roadway systems within the vicinity of the project should be able to handle closure –related traffic without a significant impact on the current LOS of the area roads.

MITIGATION

Sunrise has indicated its intention to comply with all such LORS relating to: 1) the transport of oversized loads, 2) the transport of hazardous materials, and 3) implementation of a program which addresses lighting and traffic control measures for construction activities on or adjacent to public roads, such as linear components, in accordance with Kern County General Plan (Circulation Element) policies.

STAFF'S PROPOSED MITIGATION

Staff has proposed mitigation measures to address Caltrans concern about a detailed traffic analysis at the intersections of State Route 119/Midway Road and the repair of roadway pavement due to truck traffic impacts during construction, and implementation of a traffic control plan. With these mitigation measures, the traffic and transportation issues will be reduced to less than significant.

CONCLUSIONS AND RECOMMENDATIONS

POWER PLANT

1. The transportation of hazardous materials during the construction phase and increased roadway demand resulting from the daily movement of workers and

materials, while noticeable, will not increase beyond significance thresholds established by local and regional authorities.

2. During the operational phase, increased roadway demand resulting from the daily movement of workers and materials will be minimal.
3. All transportation and handling of hazardous substances can be mitigated to insignificance by compliance with federal and state standards established to regulate hazardous substances.

LINEAR FACILITIES

1. Construction of the transmission lines will have minimal impacts on the function of area roadways. Routine construction safety measures and required encroachment permits should be sufficient to ensure no roadway impacts.
2. Because construction requires trenching within public road rights-of-way, the installation of underground facilities will impact both roadway function and levels of service. However, these impacts are expected to be short-term and not result in significant traffic and transportation impacts. Sunrise has indicated their intent to provide appropriate traffic control measures, and these are contained within the conditions of certification. In addition, all development will take place in compliance with Caltrans and Kern County limitations for encroachment into public rights-of-way.

Therefore, staff concludes that there will be no significant adverse impacts in the area of traffic and transportation as a result of the Sunrise project.

CONDITIONS OF CERTIFICATION

TRANS-1 The project owner shall comply with Caltrans and Kern County limitation on vehicle sizes and weights for vehicles owned by the project owner. In addition, the project owner or its contractor shall obtain necessary transportation permits from Caltrans and all relevant jurisdictions for roadway use.

Verification: In the Monthly Compliance Reports, the project owner shall submit copies of any oversize and overweight transportation permits received during that reporting period. In addition, the project owner shall retain copies of these permits and supporting documentation in its compliance file for at least six months after the start of commercial operation.

TRANS-2 The project owner or its contractor shall comply with Caltrans and Kern County limitations for encroachment into public rights-of-way and shall

obtain necessary encroachment permits from Caltrans and all relevant jurisdictions.

Verification: In Monthly Compliance Reports, the project owner shall submit copies of any encroachment permits received during the reporting period. In addition, the project owner shall retain copies of these permits and supporting documentation in its compliance file for at least six months after the start of commercial operation.

TRANS-3 The project owner shall require as a condition of its contract with independent truckers that permits and/or licenses be obtained from the California Highway Patrol and/or Caltrans for the transport of hazardous materials.

Verification: The project owner shall include in its Monthly Compliance Reports, copies of all permits/licenses acquired by the project owner and/or subcontractors concerning the transport of hazardous substances.

TRANS-4 Prior to the start of construction, the project owner shall consult with Kern County, and prepare and submit to the Compliance Project Manager (CPM) a construction traffic control plan and implementation program which addresses the following issues:

- timing of heavy equipment and building materials deliveries;
- signing, lighting, and traffic control device placement;
- establishing construction work hours outside of peak traffic periods;
- emergency access;
- temporary travel lane closures;
- maintaining access to adjacent residential and commercial property; and
- off-street employee parking in construction areas during peak construction.

Verification: Thirty (30) days prior to start of construction, or a lesser period of time as mutually agreed to by the project owner and the CPM, the project owner shall provide to the CPM for review and approval, a copy of its construction traffic control plan and implementation program.

TRANS-5 The project owner or its contractor shall install crossing structures and netting, if required by Caltrans across major thoroughfares as a safety precaution and to reduce the potential for damage from falling construction materials or equipment during cable-stringing activities. Thirty days prior to cable stringing, the project owner shall consult with Caltrans, and prepare and submit to the CPM a safety plan and implementation program.

Verification: Thirty (30) days prior to wire stringing, or a lesser period of time as mutually agreed to by the project owner and the CPM, the project owner shall

provide to the CPM for review and approval, a copy of its safety plan and implementation program.

TRANS-6 Following construction of the power plant and all related facilities, the project owner shall meet with the CPM and Kern County to determine if any actions are necessary and develop a schedule to complete the repair of any roadways damaged due to project construction.

Protocol: Thirty days prior to start of construction or a lesser period of time as mutually agreed by the project owner and the CPM, the project owner shall photograph the primary routes to be used by construction traffic (from the junction of Hwy. 33 westerly along Midway Road to Mocal Road, north along Shale Road to the project site). The project owner shall provide the CPM and Kern County with a copy of these photographs. Following project construction, the project owner will meet with the CPM and Kern County to determine the project related road damage, if any.

Verification: Within 30 days of the completion of project construction, the project owner shall meet with the CPM and Kern County and determine if any roadway repairs are necessary. The project owner shall provide a copy of a letter from Kern County acknowledging satisfactory completion of the roadway repairs, if necessary in the first Annual Compliance Report following start of operation of the Sunrise project.

TRANS-7 The project owner shall provide a Traffic Control Plan to Caltrans for review prior to their issuance of an encroachment permit.

Protocol: The Traffic Control Plan shall include the following element:

- Provide timeframes for flagman and/or sheriff assignments during the six-months of peak construction period at the intersection of State Route 119 and Midway Road.

Verification: The Traffic Control Plan shall be submitted to Caltrans for review at least 30 days prior to start of project construction. The project owner shall provide a copy of a letter from Caltrans acknowledging acceptance of the Traffic Control Plan in a Monthly Compliance Report within 30 days of receipt of the letter.

TRANS-8 Prior to start of construction, the project owner shall negotiate an agreement with Caltrans for the payment of a fair share amount for future signalization at the intersection at State Route 119 and Midway Road.

Verification: The fair share amount shall be paid to Caltrans at least 30 days prior to start of project construction. The project owner shall provide a copy of a letter from Caltrans acknowledging receipt of the fair share amount in a Monthly Compliance Report within 30 days of receipt of the letter.

REFERENCES

- Caltrans - Caltrans Office of System Planning - personal communication with M. Frausto.
- Community of Buttonwillow - Buttonwillow Community Development Plan, 1974
- Kern County - Kern County General Plan, 1992
- SCPP(Sunrise Cogeneration and Power Project) 1998a. Application for Certification, Sunrise Cogeneration and Power Company (98-AFC-4). Submitted to the California Energy Commission, December 21, 1998.
- SCPP (Sunrise Cogeneration and Power Project/Soares/King) 1999b. Supplementary AFC Material in Response to Data Adequacy Worksheets. Submitted to the California Energy Commission on January 28, 1999.
- OTP (Office of Transportation and Planning/Frausto) 1999a. Thank you letter and comments on Sunrise's review of the Project. Submitted to California Energy Commission on January 22, 1999.
- CEC (California Energy Commission) 1999j. Sunrise Cogeneration and Power Project Data Adequacy Recommendation. Submitted to Commissioners Michal Moore, William Keese, Jananne Sharpless, Robert Laurie and David Rohy on February 1, 1999.
- CEC (California Energy Commission) 1999k. Sunrise Cogeneration and Power Project Data Adequacy Worksheets. Submitted to Commissioners David Rohy, Jananne Sharpless, Michal Moore, William Keese and Robert Laurie on February 5, 1999.
- CEC (California Energy Commission) 1999l. Request for Agency Participation in the Review of the Sunrise Cogeneration and Power Facility Project Application for Certification. Submitted to Kern County Environmental Health/Brownfield on January 29, 1999.
- CEC (California Energy Commission) 1999m. Submitted to the Agency Distribution List the Sunrise Cogeneration and Power Project Supplemental Material on February 5, 1999.

SOCIOECONOMICS

Testimony of Joseph Diamond¹

INTRODUCTION

Generally, a California Energy Commission (Energy Commission) staff socioeconomic impact analysis evaluates the project induced changes on community services and/or infrastructure and related community issues such as environmental justice and facility closure. Direct, indirect, and cumulative impacts are also included in this analysis. This analysis discusses the potential impacts of the proposed Sunrise project on local communities, community resources, and public services, pursuant to Title 14 California Code of Regulations, Section 15131.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

The following LORS are applicable to the Sunrise Cogeneration and Power Company (SCPC) project:

FEDERAL

Executive Order 12898, "Federal Actions to address Environmental Justice (EJ) in Minority Populations and Low-Income Populations." The order focuses federal attention on the environment and human health conditions of minority communities and directs agencies to achieve environmental justice as part of this mission. The Executive Order requires the US Environmental Protection Agency (EPA) and all other federal agencies (as well as state agencies receiving federal funds) to develop strategies to address this problem. Agencies are required to identify and address any disproportionately high and/or adverse human health or environmental effects of their programs, policies, and activities on minority and/or low-income populations. The Energy Commission receives federal funds and is thus subject to this Executive Order.

STATE

CALIFORNIA GOVERNMENT CODE, SECTION 65996-65997

As amended by SB 50 (Stats. 1998, ch. 407, sec. 23), states that public agencies may not impose fees, charges or other financial requirements to offset the cost for school facilities.

LOCAL

Kern County General Plan - Public facilities component pertinent to socioeconomics.

(Policy No. 8) In evaluating a development application, Kern County will consider impacts on the local school districts.

¹ The cumulative impacts section is a joint product of Dale Edwards and Joseph Diamond.

(Implementation E) Determine the local cost of facility and infrastructure improvements and expansion which are necessitated by new development of any type and prepare a schedule of charges to be levied on the developer at the time of approval of the Final Map.

SETTING

Sunrise is located in the rural oil fields of western Kern County. For a full description of the socioeconomic setting, please refer to the Project Description section of this document and the project description and location (8.8.2) in the Sunrise AFC, Vol. I., December 1998 (SCPP 1998a). The study area (affected area), defined by Sunrise Cogeneration and Power Company (SCPC) in the socioeconomics section of the AFC, includes: western Kern County, Arvin, Bakersfield, Buttonwillow, Maricopa, McFarland, McKittrick, Taft, Shafter, Wasco, and the unincorporated areas of Fellows, Ford City, and Derby Acres. These communities are within a one-way commute distance of the power plant site where construction and operations workers may live.

IMPACTS

Staff reviewed the Sunrise AFC, Vol. I, December 1998, socioeconomic section (SCPP 1998a & 1999a1) regarding potential impacts to community services and infrastructure (i.e., employment, housing, schools, utilities, emergency and other services), and environmental justice. Based on its independent analysis and the SCPP socioeconomic data provided and referenced from governmental agencies and trade associations, staff finds the AFC's socioeconomic analysis acceptable and agrees with its conclusions with the exception of the cumulative impacts on schools and the fire department which are described herein.

Staff criteria for assessing socioeconomic impacts or possible impacts is evolving. Fixed limits are used for housing (a 5 percent or less of permanent available housing) and EJ which has a threshold of 50 percent for minority/low-income population. Criteria for subject areas such as fire protection, water supply and wastewater disposal are handled by other staff. Educational impacts are subjectively determined but are moot as described later in the testimony. And finally, impacts such as medical services, law enforcement, community cohesion etc. are based on subjective judgements or input from local and state agencies.

Greater non-local employment has the potential for resulting in significant impacts.

EMPLOYMENT

SCPC states in the AFC that 66 percent of the non-local construction workers (approximately 20 workers at peak construction) are expected to live in Bakersfield. These are results that staff would expect because more amenities are available in Bakersfield when compared to the communities closer to the project site. Furthermore, the results indicate that approximately 22 percent or 6 workers will likely live in Taft or Maricopa, 11 percent or about 3 workers will likely live in Shafter

or Wasco, and about one worker will live in other areas of Kern County and Southern California.

The Impact Analysis For Planning (IMPLAN) model (an input-output model), used in the AFC by SCPC to estimate employment impacts from the Sunrise project on the affected area, is widely used and acceptable to staff. The University of California at Berkeley uses the IMPLAN model for regional economic assessment and it has been used to assess other generating projects in the area. It is a common regional economic tool. In general, most multipliers are estimated by showing the total change divided by the initial change. Employment multipliers refer to the total additional employment stimulated by the new economic activity. IMPLAN is a disaggregated type of model which divides the (regional) economy into sectors and provides a multiplier for each sector (Lewis et al. 1979). The employment multipliers used by La Paloma were also applied to Sunrise (3.23 for construction e.g., each new construction job supports approximately 2.2 indirect and induced jobs in the regional economy and 2.88 for operations with approximately 1.88 indirect and induced jobs in the regional economy (La Paloma 1998)) and are within an acceptable range of 2 often cited by many economists. The 2.88 multiplier for operations is based on a large electrical facility, the Midway-Sunset power plant, in Kern County (Smith 1999).

Project construction is expected to occur over a 15 month period. The peak construction, when the highest number of workers will be needed, is expected to occur in the 7th through 11th months of construction. The greatest number of construction workers, estimated to be 255 workers, will be needed in the 9th month of construction. Approximately 225 of these workers are expected to come from the communities in the affected area (within a two-hour commute radius), and approximately 30 are expected to relocate from communities outside of the two-hour commute radius.

The number of construction workers needed outside of the peak construction period will range from fewer than 100 in the first three months of construction to approximately 78 workers in the 15th month of construction. The average number of non-local workers needed for power plant construction will be 23. During operation of the project, about 24 workers will be needed to maintain and operate the project. Approximately 12 (50 percent) of these operations workers may be non-local in a worst-case scenario estimate according to SCPC.

The total employment, estimated by SCPC using an IMPLAN multiplier of 3.23 for construction, is the equivalent of 517 jobs (which includes 357 secondary jobs), based on an average of 160 project-related construction jobs. For project operations, an average of 24 jobs with an IMPLAN multiplier of 2.88 for operations results in an equivalent of 69 total jobs (which includes 45 secondary jobs).

The electric transmission line will have direct construction impacts that are small and short-term and in a worst-case scenario would likely be insignificant since construction workers are not likely to bring their families. Indeed, the SCPC has indicated (alternative A which appears in Socioeconomics Table 1) that it included electric power transmission construction workforce estimates in the SCPP AFC.

Electric power transmission options B-F result in fewer total construction workers at the peak period (i.e., to 251 from 255) and total non-local workers would fall (i.e., to 29 from 30). Furthermore, the electric power transmission operation workforce remains unaffected by any electric power transmission option. (SCPP 1999m, AFC Transmission Supplement 2, pages 3.8-1 to 3.8-5)

Additional facilities for the Sunrise project that might be important for indirect impacts are the Texaco California Inc. (TCI) Main Utility Corridor, the 20-inch gas pipeline interconnecting the KRGTC/MPC natural gas pipeline, and any future Midway-Sunset oil field expansion where the steam will be provided by the Sunset project, including new leaseholds, property acquisitions, and steam sales to business entities other than Texaco and its subsidiaries, occurring within the area affected by the Sunrise project during the life of the project. "The Sunrise project has no current plans to engage in steam sales to any third party other than TCI.... Any other TCI Midway-Sunset oilfield expansion activities would occur independent of the Sunrise Project." (SCPP 1999g, DR 55) The new oil field development, the TCI corridor and natural gas pipeline will be built largely with local labor so no additional impacts were estimated. (SCPP 1999g, DR 56 and Dailey 1999) Staff agrees based on the documentation and therefore did not pursue any further impact analysis.

Based on Staff contact with Texaco Global Gas & Power regarding the indirect impacts on the KCFD from 700 new oil wells in 1998, and 600 in 1999 and an additional 700 new oil wells (Sunrise 1999), the following response was received:

1. "The strategic plan that was used to generate the area of influence radius and # of new wells went through 2004. Under this plan the wells are predicted to be spread out over the 6 year period from 1999-2004. The plan shows 65% of the new wells as oil production wells and the remaining 35% as steam injection wells.
2. The fire department makes annual inspection of all Texaco facilities in the Midway area to update their records and maps, and make fire protection recommendations. The increased number of wells drilled pose no new or unusual fire safety concerns in the Midway area because the drilling and subsequent new wells are all part of an existing field." (CEC 1999 ,DR)

Texaco has its own fire fighting brigade. (Castle, 1999a)

Texaco Global Gas & Power provided to KCFD township and range sections for expected locations of the additional 700 new oil wells. The KCFD concluded on this issue:"After reviewing the information concerning 700 new oil wells by Texaco Global Gas and Power in the Sunrise Project I have concluded that the impact will not cause an unusual response increase by the Kern County Fire Department. We will not be asking for any additional staffing at this time at the Kern County Fire Department stations in the area. Further development in the area with occupancies that have not been included previously in the plans submitted for the Sunrise Co-Generation Project will have to be assessed on a case by case impact on the Kern

County Fire Department.” (Castle, 1999b). Staff accepts the KCFD’s analysis and conclusion.

HOUSING

Permanent housing is considered to be in short supply if the vacancy rate is less than five percent (Cleary 1989). As of January 1998, approximately 81,932 housing units existed in Bakersfield, 3,364 in Shafter, 4,114 in Wasco, 2,405 in Taft, 2,076 in McFarland, and 455 in Maricopa. There are approximately 94,346 total housing units in these communities which are within a two-hour commute. The vacancy rate for this housing averages approximately five percent. Therefore, approximately 5,148 single-family, multi-family and mobile homes are available. In addition, as of May 1998, there are approximately 5,469 total motel/hotel rooms in four of the six communities, with the availability being about 30 percent on average or 1,641 rooms. The combination of housing and motel/hotel rooms probably available to non-local construction and operations workers for this project is more than sufficient for worker needs.

SCHOOLS

Based on an average of 23 non-local construction workers and 12 non-local plant operating personnel, 23 school-aged children for plant construction and 12 school-aged children for plant operation are estimated to be added to the affected area schools. According to Table 8.8-14 in the AFC, six of thirteen affected area high schools are over capacity. Schools in western Kern County, west of Bakersfield, appear to be well below capacity in most cases and are estimated to receive 8 school-aged children during construction and 4 school-aged children during plant operation. The addition of project-related children to schools that are at- or over-capacity may increase costs in terms of supplies, equipment and/or teachers but the impact will be small. However, according to Senate Bill 50, signed by Governor Wilson on August 27, 1998, which amended section 17620 of the Education Code, school funding is restricted to property taxes and statutory facility fees collected at the time the building permit is acquired (\$.31 per square foot of covered or enclosed space). Public agencies may not impose fees, charges or other financial requirements to offset the cost for “school facilities.” School facilities are defined as “any school-related consideration relating to a school district’s ability to accommodate enrollment.” Local and state agencies are precluded from imposing (additional) fees or other required payments on development projects for the purpose of mitigating possible enrollment impacts to schools (SB 50 1998).

The life of the Sunrise power plant is estimated by SCPC in the AFC to be a minimum of 20 years. Property taxes on the plant have been estimated to be \$1.75 to \$1.95 million in the first year for use on infrastructure and services such as schools, government, and social programs and services with about \$1.18 million allocated to education.

UTILITIES, EMERGENCY AND OTHER SERVICES

The West Kern Water District can meet the project’s water supply needs with existing capacity. There are abundant electric supply options available for construction. During construction or operation, the project is not expected to place

significant demands on the Kern County Fire Department, Sheriff, or the Westside District Hospital.

FINANCIAL

SCPC estimates (SCPP 1999a1, AFC pp. 8.8-33 & 35) that the construction payroll will be \$18-23 million (1998 dollars) for 15 months, and the operation payroll will be \$1 million (1998) dollars for a minimum of 20 years, the bulk of which will be spent in the affected area communities. SCPC estimates that \$95 to \$105 million worth of materials and equipment will be purchased locally during construction and that about \$1.0 to \$1.2 million will be spent locally for operating supplies annually for a minimum of 20 years. This spending will generate sales tax revenues for the local jurisdiction (about one percent for the county, and about 6.25 percent for the State, for a total of 7.25 percent).

ENVIRONMENTAL JUSTICE

The EJ screening analysis contained in the AFC (SCPP 1999a1, AFC pages 8.8-6 to 8) is consistent with the federal EJ guidelines, and the analysis is acceptable to staff. According to the federal EJ guidelines, a minority or low income population exists if the minority or low income population percentage of the affected area is fifty percent of the affected area's general population or greater.

The EJ analysis in the AFC indicates that the affected area's minority population is less than 50 percent. According to the data presented in Table 8.8-3 in the AFC, 36 percent of the affected area population are non-white, based on 1990 US Census Data. More recent minority population data for the total affected area was not available. However, using estimated 1998 minority and total population data for Bakersfield (SCPP 1998a, AFC page 8.8-6), the growth area of Kern County, staff concludes that the affected area would still fall below the 50 percent threshold, at an estimated 43 percent, to establish EJ as an issue. In addition, the highest low-income population percentages is for Arvin at 31 percent. Therefore, further EJ analysis is not necessary.

CUMULATIVE IMPACTS

Cumulative impacts might occur when more than one project has an overlapping construction schedule that creates a demand for workers that can not be met by local labor, resulting in an influx of non-local workers and their dependents. At the time of filing of the SCPP AFC, four other power plant projects were identified in the vicinity of the Sunrise project. The SCPP AFC included a discussion of cumulative impacts and concluded that there were none.

Several power plant projects in western Kern County have either filed AFCs or are expected to soon. La Paloma filed their AFC on July 15, 1998. SCPC filed an AFC on December 21, 1998 for a 320MW cogeneration project which will be located near the community of Fellows. Elk Hills Power Plant Project filed an AFC on February 24, 1999 for a 500MW combined cycle power plant to be located at Elk Hills. AFCs are expected to be filed for the Pastoria and Midway-Sunset projects in November 1999.

SOCIOECONOMICS TABLE 1 shows the estimated number of workers by month for the estimated construction schedules for each of the power plant projects identified above. There are approximately five months that the five projects will have overlapping construction schedules. During this period, the total number of workers needed for all five projects ranges from approximately 1,274 to over 1,718². As of April 1999, the number of unemployed workers in the Kern County labor force was 37,400 out of a total civilian labor force of 282,600 or 13.2 per cent (State of California – Employment Development Department, preliminary data, 1999).

Staff agrees that SCPC will primarily draw on the local labor force for construction and operation. No significant influx of permanent employee or secondary employment households is expected due to SCPC because Kern County has a large available labor pool. With the addition of each subsequent project into the construction phase, the ability of the available local labor force to meet project construction needs decreases. The cumulative need for workers in particular crafts or specialties will exceed the availability of workers in those crafts in the local area at different times based on the numbers of specialists available and the total number of specialists needed. Each of the currently filed projects has identified their forecast for local vs. non-local workers based on the available work force by craft and their estimate of worker availability based on other project needs.

La Paloma, likely the first of the five projects to start construction, estimates that 86 and 14 percent of their average worker needs will be supplied by local and non-local workers, respectively. For peak construction, the percentages remain relatively unchanged. SCPC's estimates are basically the same as La Paloma's. The Elk Hills AFC estimates 80 percent local and 20 percent non-local construction workers for average and peak periods. These estimates for local verses non-local workers are consistent with the availability of general construction laborers and the availability of workers in specific crafts in Kern County. There is sufficient housing available in Bakersfield and other communities closer to the project sites to meet all non-local worker needs.

² The number of workers for the Sunrise project's related facilities, such as the gas supply line and water line, were not available for their AFC analysis.

SOCIOECONOMICS Table 1
Cumulative Construction Workers (Estimated)

	La Paloma	Sunrise*	Elk Hills	Midway- Sunset West**	Pastoria **	Total
Year 1999						
Dec	53					53
Year 2000						
Jan	76					76
Feb	146					146
Mar	222	64				286
Apr	304	75				379
May	403	96				499
Jun	467	142				609
Jul	555	157	111			823
Aug	597	197	128			922
Sep	637	233	142			1012
Oct	665	241	195			1101
Nov	714	255	241			1210
Dec	729	237	306			1272
Year 2001						
Jan	669	213	333	111	72	1398
Feb	625	193	352	128	140	1438
Mar	521	124	347	142	210	1344
Apr	399	104	329	195	289	1316
May	195	78	317	241	382	1213
Jun	141		310	306	444	1201
Jul			231	333	527	1091
Aug			158	352	567	1077
Sep			124	347	605	1076
Oct				329	631	960
Nov				317	678	995
Dec				310	692	1002
Year 2002						
Jan				231	664	895
Feb				158	593	751
Mar				124	495	619
Apr					379	379
May					185	185
June					134	134

* Does not include the gas line and water line workers.

** AFCs not yet filed. The number of workers are estimated, based on generating capacity of the project, compared to the three projects that have filed AFCs.

Based on an average of approximately 1,342 workers during the five months of overlapping construction for all five projects, and using an IMPLAN construction multiplier of 3.23, approximately 2,993 secondary jobs are expected to result during that period. Staff does not expect a significant number of these jobs to be filled by non-local workers because these jobs are expected to be temporary, coincident with the construction schedule, and salaries associated with indirect and induced jobs generally do not attract new workers to an area. Over a period of approximately 25 months, secondary jobs, related to the construction of two or more of these projects at the same time, are expected to range from approximately 638 to 3,207.

Using an IMPLAN operation multiplier of 2.88, secondary jobs expected from the operation of the projects range from 111 for two projects to 246 for all five projects (based on estimates of 59 employees for La Paloma and Sunrise projects, and 131 employees for all five projects). These secondary jobs are estimated to be filled from the local work force.

Based on an estimated average of 258 non-local workers for all five projects during construction, and assuming the average family size to be 2.91 persons (State of California, Department of Finance 1998), approximately 235 children are estimated to be added to Kern County schools. These children will not enter and leave the schools at the same time. During operation of the five projects, approximately 48 children are estimated to be added to western Kern County schools as a result of non-local workers relocating their families. The increase in school enrollments due to the five projects during construction will likely cause a non-environmental cumulative impact on those schools in the Bakersfield area that are currently at or over-capacity. However, the increase in school enrollments due to the five projects during operation is not expected to cause an impact because students will attend many schools that are under-capacity and the number is relatively small. Indeed, many non-local workers may not bring their children so the estimates could be high. Schools that are expected to handle more students are expanding their overall capability to meet needs and school impacts fees and property taxes will help fund education.

The Kern County Fire Department (KCFD) provides emergency medical response for the proposed power plants. The KCFD believes that it has adequate resources to provide emergency medical response for the five power plants that have been identified in this cumulative analysis.

The KCFD fire fighting resources are sufficient to cover all five of the proposed power plant projects. However, the fire department has identified a need for one new ladder truck to maintain its current level of service and to effectively respond to the types of emergency incidents that occur at facilities such as the proposed power plants. Specifically, the fire department sees an increase in the number of emergency responses that will require High Angle and Confined Space Specialist Technicians and equipment. The fire department requires one new, properly equipped, ladder truck that will be assigned to Station 21 at Taft, nine new personnel to cover three work shifts per day, and a replacement ladder truck approximately 15 years in the future.

Currently, the County has three ladder trucks, two in service and one as a backup. All three trucks are located in the metropolitan Bakersfield area. The closest ladder truck is about 40 miles away from the four power plants proposed for western Kern County. This distance makes dispatching to the area where the power plants are planned unacceptable due to the excessive response time.

The KCFD estimates the cost of a new, properly equipped, ladder truck to be \$700,000, the cost of the first year's funding for the nine new personnel to cover three shifts per day for the ladder truck to be \$750,000, and the cost for the first year of a ladder truck replacement fund to be \$75,000. Staff believes that these costs should be paid by the four power plant projects currently proposed for western Kern County (La Paloma, Sunrise, Elk Hills and Midway-Sunset West) that will benefit directly from the new ladder truck. Because full property tax payments for these new power plants will not begin until approximately 18 months after start of construction, the fire department will require up-front payments from each of the power plant owners to cover the costs for the new ladder truck, staff for the truck, and the replacement truck fund.

The KCFD estimates that the new ladder truck will take nine months to be delivered once ordered. The need for the new ladder truck begins with the start of construction of the second power plant in western Kern County. Current estimates are that construction of the second power plant will begin approximately March 2000.

Staff is aware that La Paloma, LLC is in negotiations with the KCFD to reach an agreement on funding for the three items the fire department has identified as resource needs. This agreement is expected to involve up-front payments by La Paloma for the new truck, staffing and replacement truck fund. La Paloma will then be reimbursed by the County and/or the other power plant owners as appropriate.

According to the KCFD (Chaffin 1999), the fire department estimates that the Fire Fund share of the property taxes paid by the four projects expected in the Taft area will be approximately \$1,371,500 per year. This amount is based on the estimated property tax payments described in the AFCs for the La Paloma, Sunrise and Elk Hills projects. Taxes for the Midway-Sunset project were estimated based on the Elk Hills project (both are 500 megawatt projects).

The State Board of Equalization, at an April 21, 1999 Property Tax Committee meeting, formally decided to assess only power generating facilities with a Certificate of Public Convenience and Necessity (CPCN) using unitary valuation and allocation of revenues on a countywide basis. Thus, local collection and distribution of property taxes will apply to the Sunrise project and other power plant projects proposed for Kern County.

The Kern County Sheriff will provide police service for the five new projects, and existing resources are expected to be adequate to meet law enforcement needs during construction and operation of the five projects. Westside District Hospital serves the area for four of the five new projects, and their facility is expected to

adequately meet medical service needs during construction and operation of the five new projects along with emergency services from the Kern Fire Department.

FACILITY CLOSURE

PLANNED CLOSURE

The SCPP AFC (see Facility Closure 4.0, pp. 4.1 to 4.3) provides for the inclusion of socioeconomic LORS which will be incorporated into the facility closure plan when it becomes necessary at the end of the project's economic life. The socioeconomic impacts of facility closure will be evaluated at that time.

UNEXPECTED TEMPORARY CLOSURE

Any unexpected, temporary closure would not likely cause any significant environmental impacts on the affected area, because the likely result of a temporary closure would be reactivation of the power plant by the same or a new owner within a relative short period of time. Personnel changes may occur if there is an ownership change, but socioeconomic impacts would not change significantly because the number of operating personnel would remain relatively the same.

UNEXPECTED PERMANENT CLOSURE

Any unexpected, permanent closure of the Sunrise project would not likely cause any significant socioeconomic impacts on the affected area, because facility closure impacts (i.e., dismantling) would be similar to construction impacts, and staff has found no significant socioeconomic impacts due to the construction of the project.

MITIGATION

Sunrise Cogeneration and Power Company contends that impacts to schools will be mitigated by the property taxes paid in connection with operation of the proposed project. Staff has determined that, even though a significant non-environmental cumulative impact has been identified for Kern County schools during the construction period for four power plant projects in western Kern County, including the Sunrise project, with the changes to the Education Code resulting from the passage of SB 50 in 1998, school funding is now restricted to a combination of property tax revenues and a statutory development fee based on a project's covered or enclosed space.

A potential significant cumulative impact on the KCFD has been identified. This impact results from the construction and operation of the Sunrise and one-to-three other power plant projects in western Kern County (La Paloma, Elk Hills and Midway-Sunset West). The introduction of the new power plants in this area reduces the fire department's emergency rescue capabilities below acceptable levels. The owners of the Sunrise project should be required to pay the KCFD a share of the cost to bring the fire department's emergency rescue capabilities up to acceptable levels. The La Paloma, Elk Hills and Midway-Sunset West projects will also be required to pay a share of the fire department's costs for the new ladder

truck, truck staffing and replacement truck. Should one or more of the La Paloma, Elk Hills or Midway-Sunset West projects not be certified as expected, Sunrise's share of the cost for the new ladder truck, truck staffing and replacement truck will change.

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

The estimated gross benefits from the project include increases in the affected area's property and sales taxes, employment, and sales of services, manufactured goods and equipment. For example, during average construction, 517 total jobs will be created or 360 indirect jobs. For average operations, 69 total jobs will be created with 45 indirect jobs. The annual property tax collected by the County will be \$1.75-\$1.95 million.

Staff agrees with SCPC's conclusions in the AFC that the project will not cause a significant adverse impact on the affected area's housing, schools, police, fire, emergency services, hospitals, utilities and employment if mitigation for the fire department is provided consistent with the proposed conditions of certification. SCPC will be partially reimbursed or credited for its up-front payments for the proposed agreement described in condition of certification SOCIO-2 by the County and/or the other power plant owners as appropriate.

Although staff identified a significant non-environmental cumulative impact on schools as a result of the Sunrise and other new power plant projects in western Kern County, mitigation for the impact of schools is not possible since it is fixed under current state law.

The project, as proposed, is consistent with all applicable socioeconomic LORS. The proposed conditions of certification ensure compliance with LORS, and mitigation of the identified cumulative impact on the KCFD.

RECOMMENDATIONS

For the area of socioeconomics, staff recommends that, with the adoption of the following conditions of certification, the Sunrise project be approved.

PROPOSED CONDITIONS OF CERTIFICATION

SOCIO-1 The project owner shall pay the statutory school impact development fee as required at the time of filing for the "in-lieu" building permit with the Kern County Department of Engineering and Survey Services and Building Inspection.

Verification: The project owner shall provide proof of payment of the statutory development fee in the next Monthly Compliance Report following the payment.

SOCIO-2 Not later than 30 days after certification, the project owner shall reach agreement with the KCFD and La Paloma on SCPC's portion of the total funding to be shared by the other power plant projects discussed in the testimony that are certified for the following:

- a. Purchase of a new 105-foot Pierce Quint Aerial ladder truck equipped for high angle and confined space rescues;
- b. First year funding for nine new positions for personnel to cover three shifts for the new truck; and
- c. First year funding for a replacement ladder truck.

Verification: Not later than 45 days after certification, the project owner shall provide the CPM with a copy of an agreement with the KCFD and other power plant projects discussed in the testimony for funding of items a) through c) above.

REFERENCES

- Castle, P. 1999a. Kern County Fire Marshall. Report of Conversation (ROC) of Marc Pryor with Fire Marshall Phil Castle, Kern County Fire Department regarding questions on 700 wells-Fire Protection submitted to the California Energy Commission on September 30, 1999.
- Castle, P. 1999b. Kern County Fire Marshall. Report of Conversation (ROC) of Marc Pryor with Fire Marshall Phil Castle, Kern County Fire Department regarding information provided by Mervyn Soares of Texaco on October 7, 1999.
- Soares, M. 1999. Kern County Fire Marshall. Report of Conversation (ROC) of Marc Pryor with Mervyn Soares, Texaco Global Gas & Power regarding Data Requests submitted to the California Energy Commission on September 30 and October 1, 1999.
- Castle, P. 1999b. Kern County Fire Marshall. Report of Conversation (ROC) of Marc Pryor with Fire Marshall Phil Castle, Kern County Fire Department regarding information provided by Mervyn Soares of Texaco on October 7, 1999.
- Chaffin, M. 1999. Kern County Fire Marshall. Conversation with staff on March 23, 1999.
- Cleary, Cam. 1989. California Department of Housing and Community Development. Telephone conversation with Gary D. Walker, Commission Staff, November 14, 1989.
- Dailey, William. 1999. Business specialist with Texaco Worldwide Exploration & Production. E-mail with staff on April 21.
- Elk Hills Power Company. 1999. Application For Certification. Elk Hills Power Project (99-AFC-1). Submitted to the California Energy Commission, February 16.
- Kern County Assessor's Office. 1999. Conversation with staff on April 12, 1999 with Anthony Ansolabehere, power plant appraiser.
- LPGP (La Paloma Generating Project). 1998a. Application for Certification, La Paloma Generating Project (98-AFC-2). Submitted to the California Energy Commission, August 12.
- Lewis, Eugene, Russell Youmans, George Goldman, Garnet Premer. 1979. Economic Multipliers: Can a rural community use them? Western Rural Development Center 24.

SB 50, Green. 1998. Education: Leroy F. Green School Facilities Act of 1998: Class Size Reduction Kindergarten-University Public Education Facilities Bond Act of 1998: school facilities construction: developers fees

SCPP (Sunrise Cogeneration and Power Project) 1998a and 1999a1. Application for Certification, Sunrise Cogeneration and Power Project (98-AFC-4). Submitted to the California Energy Commission, December 21, 1998 and revised January 27.

SCPP (Sunrise Cogeneration and Power Project/King) 1999g. Data Responses, Set 1A. Submitted to the California Energy Commission, April 15.

SCPP (Sunrise Cogeneration and Power Project) 1999m. Transmission Supplement 2-Sections 3.0, 4.0, remaining Appendix and Errata. Submitted to the California Energy Commission, June 4.

Smith, Charles. 1999. Consultant with Woodward-Clyde. Conversation with staff on January 5, 1999.

State of California, Employment Development Department, Monthly Labor Force Data for Counties, April 1999 (Preliminary).

TRANSMISSION SYSTEM ENGINEERING

Mark Hesters and Al McCuen

INTRODUCTION

The Transmission System Engineering (TSE) analysis provides the basis for the findings in the Energy Commission's decision. This final staff assessment indicates whether or not the transmission facilities associated with the proposed project conform to all applicable laws, ordinances, regulations and standards (LORS) required for safe and reliable electric power transmission.

The Sunrise Cogeneration and Power Company (SCPC) proposes to connect their project, the Sunrise Cogeneration and Power Project (SCPP) to Pacific Gas & Electric Company's (PG&E) transmission system. The California Independent System Operator (Cal-ISO) is responsible for ensuring electric system reliability for all participating transmission owning utilities and determines both the standards necessary to achieve reliability and whether a proposed project conforms with those standards. The Energy Commission will rely on the Cal-ISO's determinations to make its finding related to applicable reliability standards, the need for additional transmission facilities, and environmental review of the whole of the project. In this case, staff is primarily a facilitator, coordinating the Cal-ISO's process and results with the certification process and the Energy Commission decision. The Cal-ISO will provide testimony at the Energy Commission's hearings.

Staff's analysis also evaluates the power plant substation,¹ outlet line, termination facilities and outlet alternatives identified by the applicant and provides proposed conditions of certification to ensure that the project complies with applicable LORS during the design, construction, operation and potential closure of the project.

Public Resources Code, section 25523 requires the Energy Commission to "prepare a written decision...which includes: ...findings regarding conformity of the proposed site and related facilities...with public safety standards...and with other relevant local, regional, state, and federal standards, ordinances, and laws." Under the California Environmental Quality Act (CEQA) the Energy Commission must conduct an environmental review of the "whole of the project," which may include facilities not licensed by the Energy Commission (CCR, tit. 14, §15378). Therefore, the Energy Commission must identify and evaluate the environmental effect of construction and operation of any new or modified transmission facilities beyond the project's interconnection with the existing transmission system that are required as a result of the power plant addition to the California transmission system.

¹ The AFC refers to the Sunrise switchyard as a substation. A power plant switchyard (switchyard) is an integral part of a power plant and is used as an outlet for one or more electric generators. In order to be consistent with the AFC, this document will refer to the Sunrise power plant switchyard, the La Paloma power plant switchyard, and the Midway-Sunset power plant switchyard as substations.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS

- California Public Utilities Commission (CPUC) General Order 95 (GO-95), “Rules for Overhead Electric Line Construction”, formulates uniform requirements for construction of overhead lines. Compliance with this order ensures adequate service and safety to persons engaged in the construction, maintenance, operation or use of overhead electric lines and to the public in general.
- CPUC Rule 21 provides standards for the reliable connection of parallel generating stations connected to participating transmission owners.
- Western Systems Coordinating Council (WSCC) Reliability Criteria provides the performance standards used in assessing the reliability of the interconnected system. These Reliability Criteria require the continuity of service to loads as the first priority and preservation of interconnected operation as a secondary priority. The WSCC Reliability Criteria includes the Reliability Criteria for Transmission System Planning, Power Supply Design Criteria, and Minimum Operating Reliability Criteria. Analysis of the WSCC system is based to a large degree on WSCC Section 4 “Criteria for Transmission System Contingency Performance” which requires that the results of power flow and stability simulations verify established performance levels.

Performance levels are defined by specifying the allowable variations in voltage, frequency and loading that may occur on systems other than the one in which a disturbance originated. Levels of performance range from no significant adverse effect outside a system area during a minor disturbance (loss of load or facility loading outside emergency limits) to a performance level that only seeks to prevent system cascading and the subsequent blackout of islanded areas. While controlled loss of generation, load, or system separation is permitted in extreme circumstances, their uncontrolled loss is not permitted (WSCC 1998).

- North American Electric Reliability Council (NERC) Planning Standards provides policies, standards, principles and guides to assure the adequacy and security of the electric transmission system. With regard to power flow and stability simulations, these Planning Standards are similar to WSCC’s Criteria for Transmission System Contingency Performance. The NERC planning standards provide for acceptable system performance under normal and contingency conditions, however the NERC planning standards apply not only to interconnected system operation but also to individual service areas (NERC 1998).
- Cal-ISO Reliability Criteria also provide policies, standards, principles and guides to assure the adequacy and security of the electric transmission system. With regard to power flow and stability simulations, these Planning Standards are similar to WSCC’s Criteria for Transmission System Contingency Performance and the NERC Planning Standards. The Cal-ISO Reliability Criteria incorporate the WSCC Criteria and NERC Planning Standards.

However, the Cal-ISO Reliability Criteria also provide some additional requirements that are not found in the WSCC Criteria or the NERC Planning Standards. The Cal-ISO Reliability Criteria apply to all existing and proposed facilities interconnecting to the Cal-ISO controlled grid.

- Cal-ISO Scheduling Protocols and Dispatch Protocols require conformance with NERC, WSCC, and Local Area Reliability and Planning Criteria. These standards will be applied to the assessment of the system reliability implications of the Sunrise project. Also of major importance to the Sunrise project, and other privately funded projects which may sell through the California Power Exchange (Cal-PX) are the Cal-ISO Day/Hour Ahead Interzonal Congestion Management Scheduling Protocol (SP 10), the Transmission System Loss Management Scheduling Protocol (SP 4), and the Creation of the Real Time Merit Order Stack (SP 11). The Congestion Management Scheduling Protocol provides that the operation of power plants not violate system criteria when market participants request generation dispatch or the use of major interties. The Real Time Merit Order Stack is developed based on increasing energy bid prices so that the least cost bids are accepted early on and if congestion is anticipated the highest bids are not selected. The Transmission System Loss Management Scheduling Protocol uses the Cal-ISO power flow model to identify total transmission losses at each generating unit and scheduling point. Additional calculations are performed to determine if the participant will be paid more or less than, for instance, the generating units dispatched net power output (Cal-ISO 1998a, Cal-ISO 1998b).
- Cal-ISO Participating Generator Agreement consists of detailed explanations of the requirements in the Cal-ISO Tariff pertaining to the paralleled generating unit.

PROJECT DESCRIPTION

The Sunrise project is a cogeneration project with potentially three phases located in western Kern County. The first phase will produce 338 MW and operate by September 2000. SCPC has studied the affects of expanding the project to 507 MW (phase II) in 2001 and to 845 MW (phase III) in 2005 but has no current intention to proceed with phase II or phase III. Staff and the Cal-ISO have only evaluated the transmission system engineering implications for the first phase or 345 MW (Maximum). The project is therefore not certifiable for phase II or phase III. The project will be located on approximately 16 acres of land 3 miles Northwest of Fellows, California. Please refer to the Project Description section for a more detailed presentation of the site and setting.

The Sunrise project will access the California market directly or indirectly through PG&E's Midway substation near Buttonwillow, California. SCPC is seeking certification for only two of the four transmission line routes, one of which will be used by the project. One is a direct connection to the Midway substation and the other connects to the Midway substation through the proposed La Paloma Power Project. In the AFC, Transmission Supplement 2, these routes are called route B,

and F respectively. Route B is currently preferred by the applicant (Radian 1999d, page 1-1).

Both routes B and F will have the same type of substation and transmission line characteristics. The transmission line routes and end-points are different. Also the first 3.5 miles of both transmission line route alternatives are the same. The similar characteristics of each line will first be discussed and then the particular routes, after milepost 3.5, will be described.

SUNRISE SUBSTATION

The power produced by the plant will be stepped up to 230 kV and fed directly to the Sunrise substation. The Sunrise substation will be a three-position bus in a ring configuration. Two of the three positions will connect to the Sunrise generators and the third will connect to the 230 kV transmission outlet line (SCPP 1999k, page 2-3). This configuration is acceptable.

TRANSMISSION LINE CHARACTERISTICS

The proposed line will be a 230 kV double circuit line with the circuits initially connected (paralleled) so that they function as a single circuit. This configuration will allow SCPC to increase the capacity of the line to accommodate potential project expansion by separating the circuits at the Sunrise substation bus and the bus at the end of the line. The AFC proposed that each phase of the three phase lines will be made of 1,431 kilo-circular-mills (KCM) aluminum alloy conductor, named "carnation." However, Sunrise is currently studying various conductor sizes and may want to change the conductor size and type. The normal rating for the carnation conductor at 230 kV is 486 mega-volt-amps (MVA) or about 476 megawatts (MW), assuming a 0.98 power factor. Thus, the total line capacity will be approximately 952 MW. The emergency rating of the conductor will be 557 MVA or approximately 546 MW, if operated as a double circuit line (SCPP 1999k, pages 2-3 to 2-4). Depending on the final route chosen, the conductor size could be as small as 1113 KCM "Marigold" aluminum alloy conductor and as large as 1590 KCM "Falcon" ACSR (aluminum conductor steel reinforced) conductor (SCPP 1999r, page 102). Both proposed line routes will use single shaft galvanized tubular steel poles up to the point of interconnection at either the Midway substation or the La Paloma substation. This configuration of conductors and poles is acceptable. Changes in the conductor size are covered in Condition of Certification TSE 1-h.

ALTERNATIVE TRANSMISSION LINE ROUTES

Both route alternatives begin by exiting the south side of the project site generally heading west, parallel to the section line (SCPP 1999j, pages 2-3 to 2-8 and SCPP 1999k, page 9).

ROUTE B

This route connects the Sunrise substation directly to the Midway substation. To connect to the Midway substation the line will be approximately 23.3 miles long and will require about 170 poles. A description of route B is provided in the Transmission Alternatives Supplement 2 (SCCP 1999k, pages 2-4 to 2-6).

The connection at the Midway substation will require the addition of one 230 kV line termination to accommodate the Sunrise Project line. This bay is expected to lie within the fence at the Midway substation. PG&E has not decided whether or not the fence would be expanded for access purposes (SCPP 1999j, pages 2-6). Any fence line expansion will require an environmental review.

ROUTE F

This route connects the Sunrise substation to the proposed La Paloma substation and from there a joint ownership line would connect to the Midway substation. This is a 10.5 mile route to the La Paloma substation and a total of 24.2 miles to the Midway substation. Approximately 80 poles will be used to get to the La Paloma substation. A description of route B is provided in the Transmission Alternatives Supplement 2 (SCCP 1999k, pages 2-8 to 2-10)

From the La Paloma substation to the Midway substation, the route description is the same as that described in the Final Staff Assessment for the La Paloma project.

“The transmission line will be approximately 14.2 miles long and will run parallel to existing structures wherever possible. The line parallels PG&E’s Midway-Sunset 230 kV transmission line for about three miles from mile 0.9 to milepost 4. After milepost 4 the line parallels PG&E’s #2 500 kV Diablo-Midway line until it reaches the Midway substation. At the Midway substation the line is situated to maintain the necessary clearances around the numerous lines that converge at the substation (LPGP 1998a, pages 3.6-1 to 3.6-2)”.

The proposed transmission line for the La Paloma project can carry 2116 MW at its normal rating which is enough for the La Paloma and all three phases of the Sunrise project. Because line losses are high when lines are loaded as fully as the La Paloma-Midway portion would be with these projects, a higher capacity conductor may be used.

EXISTING FACILITIES AND RELATED SYSTEMS

The following electric facilities are located near the Sunrise project site and transmission line routes:

- Texaco’s Morgan substation: connected to PG&E’s Midway-Santa Maria 115 kV line and five 12 kV distribution feeders;
- PG&E’s Fellows substation: connected to PG&E’s Midway-Santa Maria 115 kV line and several 21 kV distribution feeders;
- PG&E’s Midway substation: Connected to PG&E’s 115 kV, 230 kV and 500 kV transmission systems;
- PG&E’s Midway-Santa Maria 115 kV transmission line;
- PG&E’s Taft - Mckittrick 69 kV transmission line;

- PG&E's Midway -Taft 115 kV transmission line; and
- PG&E's Taft – Elk Hills 69 kV line.

The proposed line routes include several line and road crossings as well as the California Aqueduct. Major lines that will be crossed include the Midway-Sunset 230 kV line and the Midway-Santa Maria 115 kV line. Other line crossings may be required in and around the Midway substation. Condition of certification **TSE-1(f)** requires that line crossings be coordinated with the line owner and comply with the owners standards. Major road crossings include State Highways 33 and 58, Crocker Springs Road, Reserve Road, and Mirasol Avenue (SCPP 1998a, pages 6-1 to 6-3 and SCPP 1999j, pages 2-3 to 2-7).

SYSTEM RELIABILITY

INTRODUCTION

A system reliability study is performed to determine the affects of connecting a new power plant to the existing electric grid. The study should not only identify impacts but also ways negative impacts can be minimized or negated. Any new transmission facilities such as the power plant substation, the outlet line, and, or downstream facilities, required for connection to the grid are considered part of the project and are subject to the full AFC review process. The Cal-ISO has reviewed the Preliminary Facilities Study and the Interim Detailed Facilities Study Status Report for the Sunrise project. The Cal-ISO has given preliminary approval to the project for interconnection alternatives B and F, and does not anticipate the need for any facilities beyond the breakers and bus in the Midway substation and the use of remedial action schemes for these alternatives (Cal-ISO 1999c, October 5, 1999). The Cal-ISO will give its final approval to the project after reviewing the Detailed Facilities Study.

The Cal-ISO decided to assign responsibility for congestion on transmission facilities caused by new generators to the project. The FERC rejected this tariff and directed the Cal-ISO to reconvene a stakeholder process to redesign the interconnection policy. This original tariff was called the "Advanced Congestion Cost Mitigation" solution to congestion. This solution would require the project owner to mitigate congestion impacts prior to connecting to the Cal-ISO controlled grid. The options for advanced mitigation include upgrading overloaded facilities, the construction of new facilities, remedial action schemes (RAS), a combination of upgrading and RAS, or absorbing congestion costs caused by the new generation by paying others to curtail. Staff expects the project owner and the ISO to develop remedial action schemes that will mitigate any congestion caused by the Sunrise project. The RAS will be included as conditions of certification for the project. The Cal-ISO will provide testimony on the Preliminary Facilities Study and Interim Detailed Facilities Study Status Report and will provide conclusions and findings in the Energy Commission's hearings.

At this time staff does not expect the project will require any downstream facilities. Completion of the Detailed Facilities Study and the subsequent issuance of the Cal-

ISO's conclusions and findings regarding the study will assure conformance with NERC, WSCC and Cal-ISO reliability criteria. A condition of certification **TSE-1h** is recommended to provide for Energy Commission review of the Detailed Facilities Study and the PG&E/applicant facility Interconnection Agreement.

SYSTEM RELIABILITY STUDY

A system reliability evaluation determines whether the new project would cause thermal overloads, voltage violations (voltages too high or low), and/or electric system instability (excessive oscillations). In addition to the above analysis, studies are performed to verify that sufficient reactive power (see Definition of Terms) is available. The reliability evaluation must be conducted for all credible "emergency" conditions. Emergency conditions could include the loss of a single or double circuit line, the loss of a transformer or generator, or a combined loss of these facilities. A Preliminary Facilities Study is conducted in advance of potential system changes, such as the addition of the Sunrise project into the system, in order to prevent criteria violations. The criteria used in this evaluation include the WSCC Planning Criteria, NERC Planning Standards and applicable Cal-ISO reliability criteria. The reliability implications of the Sunrise project and the need for additional facilities will be determined by the Cal-ISO based on the Detailed Facilities Study. A preliminary determination of compliance with applicable reliability criteria has been provided by the Cal-ISO (Cal-ISO 1999c, October 5, 1999).

The Sunrise project will have a maximum plant delivery in phase I of 338 MW. Based on the facilities studies filed in the AFC and on September 23, 1999 the Cal-ISO has granted preliminary approval to both routes B and F (Cal-ISO 1999c, October 5, 1999). This study is not expected to identify the need for any new transmission facilities beyond those discussed in this analysis and the SSCP AFC. The Cal-ISO has given its preliminary approval to the Sunrise project based on the Preliminary Facilities study provided in the SSCP AFC and does not anticipate the need for downstream facilities (Cal-ISO 1999c, March 30, 1999).

Power delivered from the Sunrise project to the existing Midway substation in both route options will impact power flows on existing transmission lines and substations in the Kern county region. By interconnecting at the Midway substation to PG&E's electric grid, the Sunrise project would have the most impact on the substation itself and the transmission network's ability to move power from the north to the south during heavy load periods and from the south to north during light load periods. The PG&E study included the La Paloma Project. Power flow studies analyzed the affects of Sunrise on line flows for three cases (SCPP 1998a, page 6) as follows:

3. Heavy summer 2000: this case was developed from the full-loop 2003 heavy summer must-run study case.
4. Light winter 2000-01: this case was developed from the full-loop LW1A WSCC case.
5. Heavy spring 2001: this case was developed from the full-loop WSCC Heavy Spring 2001 case. This case assumes the CDWR pumps on the Midway - Wheeler Ridge #1 and #2 230kV lines are off-line.

The power flow study results indicate that under most conditions all electric facilities would operate within their rated levels and voltages were within required ranges for both transmission route alternatives.

In the worst case studied, Heavy Spring 2001, when the Midway 500/230 kV transformer bank 12 is out of service, the Midway 500/230 kV bank 11 overloads to 142% of its emergency rating for either transmission line route. In the same case, when the Midway 500/230 kV bank 11 is out of service, the Midway 500/230 kV transformer bank 12 overloads to 176% of its emergency rating with either transmission line route. These overloads could be avoided by adopting emergency ratings for the transformer banks, adding a new transformer, upgrading the existing transformers or reducing local generation (Cal-ISO 1999c, October 5, 1999). Any of these options is an acceptable form of mitigation for the contingency, however, if a new transformer is constructed and it lies outside the Midway substation fence line then an environmental review would be required.

There are also overloads when two of the three Midway – Vincent 500 kV lines are not operating. When two of the Midway – Vincent 500 kV lines are out of service the remaining line overloads both with and without the Sunrise plant operating. The line overloads to approximately 107% of its emergency rating with and without the Sunrise plant operating. Rather than requiring new facilities, these overloads would be mitigated by reducing local generation through remedial action schemes (RAS). Sunrise has expressed its intent to participate in RAS to avoid overloading a Midway – Vincent 500 kV line during a double line outage. This is acceptable mitigation for this contingency and is required by **TSE 1h**.

If Route F is constructed and either of the circuits of the La Paloma – Midway 230 kV double circuit line is out of service then the remaining circuit overloads to about 124% of its emergency rating. This overload might be avoided by using a higher capacity conductor for the La Paloma – Midway 230 kV line. This overload could also be avoided by reducing generation from the La Paloma and Sunrise power plants (Cal-ISO 1999c, October 5, 1999).

The fault duty study indicated that, when the Sunrise project is connected to the Midway substation, the fault duty increases at nearby breakers. According to the AFC, eight 230 kV breakers at the Midway substation may need to be replaced with higher rating breakers (SCPP 1998a, page 6). However, this may change based on the analysis of the detailed facilities studies for both Sunrise and other projects around the Midway substation. Since circuit breaker replacement is considered a “within the fence” change for the project leaving the decision on the number of circuit breakers that require replacement until after the Energy Commissions decision on project certification is acceptable. Condition of certification **TSE 1b** has been written to assure that breakers comply with the Cal-ISO’s findings based on the analysis of the Detailed Facilities Study.

To fully comply with NERC’s reliability criteria, “extreme contingency” analysis must be conducted, but is not presently available. Such analysis is required by reliability criteria not to identify facility upgrades or new facilities, but rather to identify

necessary mitigation consisting of operational measures. These measures include congestion management and the implementation of RAS. The Cal-ISO does not anticipate the need for facility modification or new facilities as a result of these planned studies other than perhaps new or modified RAS (Cal-ISO 1999c, October 5, 1999). These studies will be included in the Detailed Facilities Study. The Cal-ISO will make its final determination based on the Detailed Facilities Study.

Short circuit analyses are conducted to assure that breaker ratings are sufficient to withstand high levels of current during a fault (such as when a line touches the ground). The acceptability of breaker ratings can also be determined during the compliance phase; it need not be done during the AFC process. Condition of certification **TSE-1b** has been provided to ensure that breaker ratings are adequate.

Based on the Preliminary Facilities Study results, the Interim Detailed Facilities Study Status Report and the conclusions and recommendations of the Cal-ISO, staff believes that the Sunrise project will be interconnected to the existing system in accordance with reliability criteria and that no new or modified downstream facility is required. Conformance verification with reliability criteria and interconnection standards will be assessed in the Commission's Compliance and Monitoring Process (see Conditions of Certification **TSE 1, 2 and 3**). Staff's proposed conditions of certification require a Detailed Facilities Study and an executed Interconnection Agreement between SCPC and PG&E. As a practical matter staff anticipates that the Detailed Facilities Study and approval by the Cal-ISO will be available near the end of the siting process.

ALTERNATIVES

Sunrise looked at seven different transmission line alternatives and is seeking certification for two of them. The five alternatives that were dropped include transmission routes A, C, D, E and G.

Route A was the preferred route in the original SCPC AFC and was an alternative for a 15 mile transmission line that would loop in to the Midway-Wheeler Ridge 230 kV line owned by PG&E and the California Department of Water Resources (CDWR). This route is no longer commercially feasible because the applicant has not been able to get a long-term capacity lease from CDWR.

Route C was a connection to the Pastoria substation. This option would require a transmission line more than 35 miles long, which was too costly.

Route D: This route connects the Sunrise substation to a future Midway-Sunset substation and from there through a joint ownership line runs to the Midway substation. This route would be approximately 23.7 miles long and would require about 175 poles. The applicant is no longer studying this alternative.

Route E: This is a three part route that connects the Sunrise Project and the future Midway-Sunset substation and then a joint ownership line connects to the proposed La Paloma substation and from there to the Midway Substation. This is a 10.5 mile route to the La Paloma substation and a total of 24.2 miles to the Midway

substation. Approximately 80 poles will be used to get to the La Paloma substation. The applicant is no longer studying this alternative.

Route G would have connected the Sunrise project to the proposed Elk Hills Power Project (Elk Hills) and from there to the Midway substation. Because Elk Hills is scheduled to be completed after Sunrise Project, this option introduces schedule risk into the Sunrise construction process. The proposed Elk Hills line also doesn't offer the opportunity to parallel existing lines and does not provide the benefits of the other alternatives. Hence, this option is no longer considered viable by the applicant.

CUMULATIVE IMPACTS

There is insufficient data to fully evaluate cumulative impacts on the transmission system. Two other projects, La Paloma and Elk Hills, located in the same general area have filed AFCs with the Energy Commission. Staff expects two more projects, the Pastoria Power Project (Pastoria) and the Midway-Sunset Power Project (Midway-Sunset) will file AFCs later this year.

The SCPP AFC included a Preliminary Facilities Study for three phases of the Sunrise project. Thus a reliability analysis was completed for a 328 MW, 507 MW and 845 MW project. The case with an 845 MW Sunrise project provides information on the effects of approximately 1,785 MW of new generation connected to the Midway substation. The analysis includes 940 MW for the La Paloma Project plus all three phases or 845 MW for Sunrise. This 1,745 MW level is very close to the expected output of La Paloma, Sunrise phase 1 and the Midway-Sunset Expansion ($940 + 320 + 500 = 1,760$). Under normal operating conditions, there were no voltage or thermal loading problems. When contingencies occurred, specifically when either the Midway 500/230 kV banks 11 or 12 were out of service, there were overloads. These overloads would be mitigated through the implementation of remedial action schemes (SCPP 1998a, Preliminary Facilities Study).

Elk Hills has filed an interconnection study in the La Paloma case on the cumulative system impacts of the La Paloma, Sunrise and Elk Hills projects. Neither staff nor the Cal-ISO has fully reviewed this study. According to the Elk Hills study, the interconnection of either or both of the Sunrise and Elk Hills projects to the Midway substation after the La Paloma project will require:

- replacing eight 230 kV circuit breakers at the Midway substation with higher duty circuit breakers;
- rearranging the existing 230 kV bus and transmission towers at the Midway substation; and
- extension of the existing 230 kV bus at the Midway substation and adding two 230 kV bays (Elk Hills, March 19, 1999).

Both the Sunrise and Elk Hills projects have described interconnection options that loop into the Midway-Wheeler Ridge 230 kV transmission line that is co-owned by PG&E and the California Department of Water Resources. If the projects use this

option, eight breakers at the Midway substation will need to be replaced and a remedial action scheme will be implemented under specific conditions (Elk Hills, 1999a). As previously discussed in the alternatives analysis, this isn't a viable option.

The Midway-Sunset and Pastoria projects have not filed AFCs with the Energy Commission. Staff does not have sufficient information on the effects of these projects on the transmission grid and cannot analyze potential impacts due to these projects.

FACILITY CLOSURE

INTRODUCTION

The parallel operation of generating stations is controlled, in part by CPUC Rule 21. This rule and standard utility practices for interconnecting a generating unit provide for the participating transmission owner (PTO) to have control of breakers and disconnect switches where the outlet line terminates (the Midway substation) and general control over the interconnected generators. Prior to construction and interconnection of a generating unit, the PTO reviews and comments on the plans and specifications for the power plant and termination equipment that is important to safe and reliable parallel operation² and inspects the interconnection facilities. Contractual provisions may be developed to provide backup, or other power service, and codify procedures to be followed during parallel operation. Before generating stations are permitted to bid into the Cal-PX and be dispatched by the Cal-ISO, generator standards must be met and the generating station must commit to comply with instructions of the Cal-ISO dispatchers. All participating generators must sign a Participating Generator Agreement (Cal-ISO 1998a, Cal-ISO 1998b). Procedures for planned, unexpected temporary closure and unexpected permanent closure must be developed or verified to facilitate effective communication and coordination between the generating station owner, the PTO and the Cal-ISO to ensure safety and system reliability.

CPUC General Order 95, Rule 31.6 requires that "lines or portions of lines permanently abandoned shall be removed by their owners so that such lines shall not become a public nuisance or a hazard to life or property." Condition of certification TSE-1c requires compliance with this rule.

The ability of the above LORS to reasonably assure safe and reliable conditions, in the event of facility closure, was evaluated for three scenarios:

PLANNED CLOSURE

This type of closure occurs in a planned and orderly manner such as at the end of its useful economic or mechanical life or due to gradual obsolescence. Under such

² As an example, the PTO has control over the generating unit breakers so that only when the PTO's line crews have completed maintenance, for instance, and are clear of the line or other facilities, could the unit reclose the system.

circumstances, the requirement for the owner to provide a closure plan 12 months prior to closure, in conjunction with applicable LORS, is considered sufficient to provide adequately for safety and reliability. For instance, a planned closure provides time for the owner to coordinate with the PTO³ to assure (as one example) that the PTO's system will not be closed into the outlet thus energizing the project substation. Alternatively, the owner may coordinate with the PTO to maintain some power service via the outlet line to supply critical station service equipment or other loads.⁴

UNEXPECTED TEMPORARY CLOSURE

This unplanned closure occurs when the facility is closed suddenly and/or unexpectedly for a short term due to unforeseen circumstances such as a natural or other disaster or emergency. During such a closure the facility cannot insert power into the utility system. Closures of this sort can be accommodated by establishment of an on-site contingency plan (see General Conditions Including Compliance Monitoring and Closure Plan).

UNEXPECTED PERMANENT CLOSURE

This unplanned closure occurs when the project owner abandons the facility. This is considered to be a permanent closure. This includes unexpected closure where the owner remains accountable for implementing the on-site contingency plan. It can also include unexpected closure where the project owner is unable to implement the contingency plan, and the project is essentially abandoned. An on-site contingency plan, that is in place and approved by the CPM prior to the beginning of commercial operation of the facilities, will be developed to assure safety and reliability (see General Conditions Including Compliance Monitoring and Closure Plan).

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

The power plant substation, outlet lines, and terminations are acceptable assuming the conditions of certification are implemented

Staff has received the Preliminary Facilities Study and the Cal-ISO has issued preliminary findings regarding the Sunrise connection to the Midway substation. The Cal-ISO's preliminary findings indicate that reliability criteria will be met and no downstream facilities beyond potentially eight circuit breakers at the Midway substation will be required for the interconnection of the Sunrise project to meet NERC, WSCC and Cal-ISO reliability criteria; staff concurs.

³ The PTO, in this instance, is PG&E, e.g., the system owner to which the project is interconnected.

⁴ These are mere examples, many more exist.

Interconnection of the project will comply with reliability criteria assuming implementation of the conditions of certification.

Phase II and Phase III of the Sunrise project have not been analyzed and no affirmative finding can be made.

RECOMMENDATIONS

Staff proposes the following conditions of certification to insure system reliability and conformance with LORS.

CONDITIONS OF CERTIFICATION

TSE-1 The project owner shall ensure that the design, construction and operation of the proposed transmission facilities will conform to requirements listed below. The substitution of Compliance Project Manager (CPM) approved "equivalent" equipment and equivalent substation configurations is acceptable.

- a. The Sunrise project 230 kV substation shall include busses in a ring configuration or a breaker and a half scheme.
- b. Breakers and bus in the power plant substation and other substations where applicable shall be sized to comply with a short circuit analysis.
- c. The power plant switchyard, outlet line and termination shall meet or exceed the requirements CPUC General Order 95.
- d. One of the two line alternatives shall be constructed.
- e. Termination facilities at the Midway substation shall comply with applicable Cal-ISO and PG&E interconnection standards (PG&E Interconnection Handbook and CPUC Rule 21).
- f. Outlet line crossings and line parallels with transmission and distribution facilities shall be coordinated with the transmission line owner and comply with the owner's standards.
- g. The transmission facilities will use steel pole construction and conductors which could be as small as 1113 KCM "Marigold" aluminum alloy conductor and as large as 1590 KCM "Falcon" ASCR.
- h. The applicant shall provide a Detailed Facilities Study including a description of RAS sequencing and timing and an executed Facility Interconnection Agreement for the Sunrise project transmission interconnection with PG&E. The Detailed Facilities Study and Interconnection Agreement shall be coordinated with the Cal-ISO.

Verification: At least 60 days prior to start of construction of transmission facilities, the project owner shall submit for approval to the CPM, electrical one-line diagrams signed and sealed by the registered professional electrical engineer in responsible charge, a route map, and an engineering description of equipment and the configurations covered by requirements 1a through 1h above. The Detailed Facilities Study and executed interconnection agreement shall concurrently be provided. Substitution of equipment and substation configurations shall be identified and justified by the project owner for CPM approval.

TSE-2 The project owner shall inform the CPM of any impending changes, which may not conform to the requirements 1a through 1h of TSE-1, and have not received CPM approval, and request approval to implement such changes. A detailed description of the proposed change and complete engineering, environmental, and economic rationale for the change shall accompany the request. Construction, involving changed equipment or substation configurations, shall not begin without prior written approval of the changes by the CPM.

Verification: At least 60 days prior to construction of transmission facilities, the project owner shall inform the CPM of any impending changes which may not conform to requirements of TSE-1 and request approval to implement such changes.

TSE-3 The project owner shall be responsible for the inspection of the transmission facilities during and after project construction, and any subsequent CPM approved changes thereto, to ensure conformance with CPUC GO-95 and CPUC Rule No. 21 and these conditions. In case of non-conformance, the project owner shall inform the CPM in writing, within 10 days, of discovering such non-conformance and describe the corrective actions to be taken.

Verification: Within 60 days after synchronization of the project, the project owner shall transmit to the CPM an engineering description(s), and one-line drawings of the “as-built” facilities, signed and sealed by the registered electrical engineer in charge. A statement attesting to conformance with CPUC GO-95, CPUC Rule No. 21, the PG&E Interconnection Handbook, and these conditions shall be concurrently provided.

REFERENCES

Cal-ISO (California Independent System Operator). 1998a. Cal-ISO Tariff Scheduling Protocol, posted April 1998, Amendments 1,4,5,6, and 7 incorporated.

Cal-ISO (California Independent System Operator). 1998b. Cal-ISO Dispatch Protocol, posted April 1998.

Cal-ISO (California Independent System Operator) 1999c, California ISO's conclusions and preliminary findings regarding the SCCP transmission interconnection alternatives. Letter from Ron S. Daschmans to Julie D. Way, submitted to the California Energy Commission October 5, 1999.

NERC (North American Electric Reliability Council). 1998. NERC Planning Standards, September 1997.

WSCC (Western Systems Coordinating Council). 1997. Reliability Criteria, August 1998.

SCPP (Sunrise Cogeneration and Power Project) 1998a. Application for Certification, Sunrise Cogeneration and Power Company (98-AFC-4). Submitted to the California Energy Commission, December 21, 1998.

SCPP (Sunrise Cogeneration and Power Project/Muraoka) 1999j. Transmission Alternatives, Supplement One. Submitted to California Energy Commission on May 5, 1999.

SCPP (Sunrise Cogeneration and Power Project/D. Muraoka) 1999k. Transmission Alternatives Supplement Two. Submitted to the California Energy Commission on May 21 1999.

LPGP (La Paloma Generating Project). 1998a. Application for Certification, La Paloma Generating Project (98-AFC-2). Submitted to the California Energy Commission, August 12, 1998.

Elk Hills, LLC (Elk Hills), 1999. Elk Hills submittal, March 1999.

SCPP (Sunrise Cogeneration & Power Project) 1999r. Sunrise Comments on Preliminary Staff Assessment. Submitted to the California Energy Commission September 2, 1999.

DEFINITION OF TERMS

ACSR Aluminum cable steel reinforced. A composite conductor made up of a steel core surrounded by aluminum wire.

Ampacity Current-carrying capacity, expressed in amperes, of a conductor at specified ambient conditions, at which damage to the conductor is nonexistent or deemed acceptable based on economic, safety, and reliability considerations.

Ampere The unit of current flowing in a conductor.

Bundled Two wires, 18 inches apart.

Bus Conductors that serve as a common connection for two or more circuits.

Conductor The part of the transmission line (the wire) which carries the current.

Congestion Management Congestion management is a scheduling protocol, which provides that dispatched generation and transmission loading (imports), will not violate criteria.

Emergency Overload See Single Contingency. This is also called an L-1.

Kcmil or kcm Thousand circular mil. A unit of the conductor's cross sectional area, when divided by 1,273, the area in square inches is obtained.

Kilovolt (kV) A unit of potential difference, or voltage, between two conductors of a circuit, or between a conductor and the ground.

L-1 The outage of a single circuit.

Megavar One megavolt ampere reactive.

Megavars Mega-volt-Ampere-Reactive. One million Volt-Ampere-Reactive. Reactive power is generally associated with the reactive nature of motor loads that must be fed by generation units in the system.

Megavolt ampere (MVA) A unit of apparent power, equals the product of the line voltage in kilovolts, current in amperes, the square root of 3, and divided by 1000.

Megawatt (MW) A unit of power equivalent to 1,341 horsepower.

Normal Operation/ Normal Overload When all customers receive the power they are entitled to without interruption and at steady voltage, and no element of the transmission system is loaded beyond its continuous rating.

N-1 Condition See Single Contingency. Also called an L-1.

Outlet Transmission facilities (circuit, transformer, circuit breaker, etc.) linking generation facilities to the main grid.

Power Flow Analysis A power flow analysis is a forward looking computer simulation of essentially all generation and transmission system facilities that identifies overloaded circuits, transformers and other equipment and system voltage levels.

Reactive Power Reactive power is generally associated with the reactive nature of motor loads that must be fed by generation units in the system. An adequate supply of reactive power is required to maintain voltage levels in the system.

Remedial Action Scheme (RAS) A remedial action scheme is an automatic control provision, which, for instance, will trip a selected generating unit upon a circuit overload.

SF6 Sulfur hexafluoride is an insulating medium.

Single Contingency Also known as emergency or N-1 condition, occurs when one major transmission element (circuit, transformer, circuit breaker, etc.) or one generator is out of service.

Solid dielectric cable Copper or aluminum conductors that are insulated by solid polyethylene type insulation and covered by a metallic shield and outer polyethylene jacket.

Thermal rating See ampacity.

TSE Transmission System Engineering.

Undercrossing A transmission configuration where a transmission line crosses below the conductors of another transmission line, generally at 90 degrees.

Underbuild A transmission or distribution configuration where a transmission or distribution circuit is attached to a transmission tower or pole below (under) the principle transmission line conductors.